

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

PLAN AND PROFILE OF
CAPE COD RAIL TRAIL EXTENSION - PHASE II
(BRIDGE NO. D-07-007 = Y-01-010 (BNH))

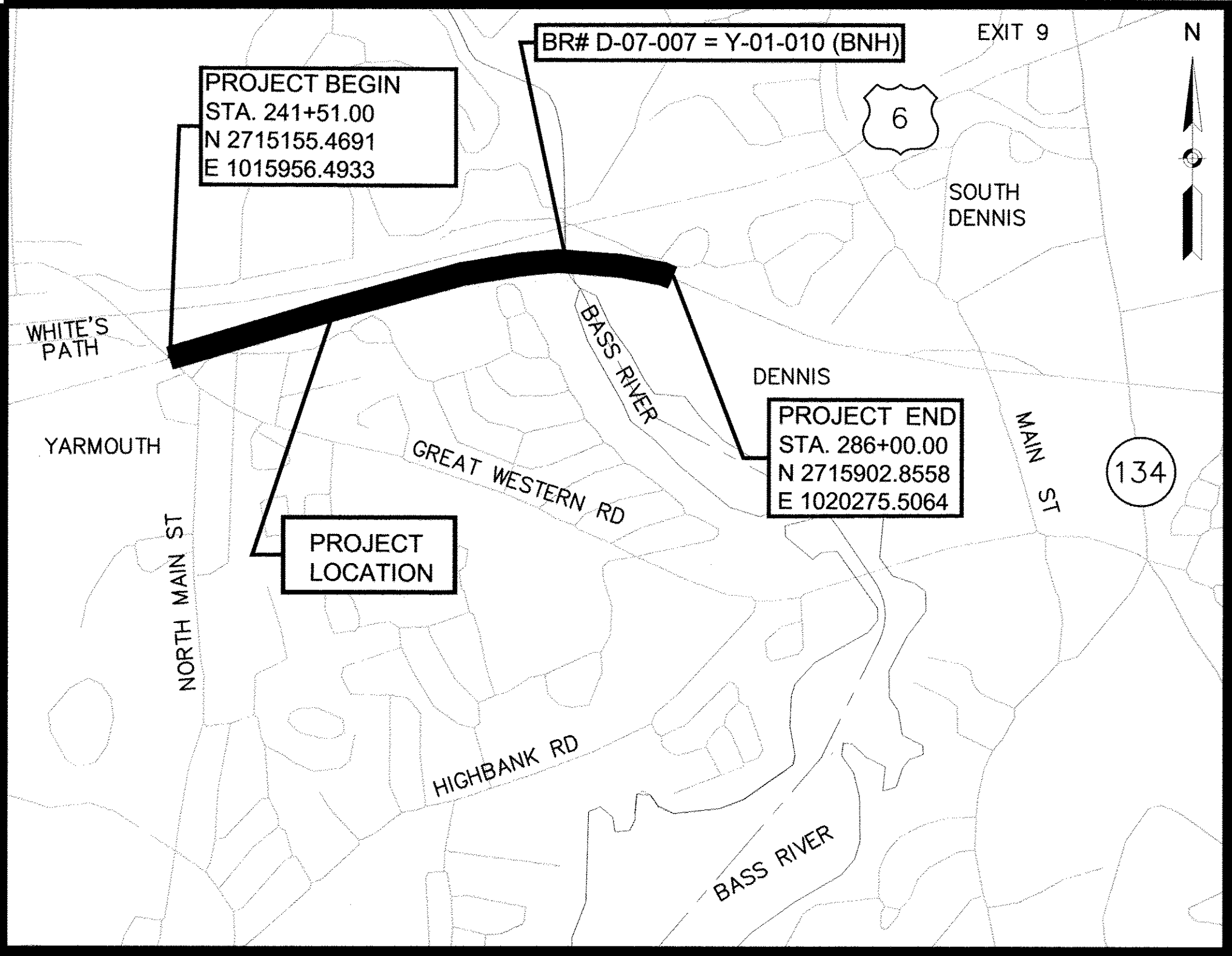
IN THE TOWNS OF
YARMOUTH & DENNIS
BARNSTABLE COUNTY

FEDERAL AID PROJECT NO. STP/TIP-002S(958)X

YARMOUTH & DENNIS CAPE COD RAIL TRAIL EXTENSION - PHASE II			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	1	68
PROJECT FILE NO. 607571			
TITLE & INDEX SHEET			

THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED JULY 1, 2015, THE 2014 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, WILL GOVERN.

INDEX	
SHEET NO.	DESCRIPTION
1	TITLE & INDEX SHEET
2	LEGEND, GENERAL NOTES & ABBREVIATIONS
3	KEY PLAN & BORING LOCATIONS
4-5	TYPICAL SECTIONS & PAVEMENT NOTES
6	CONSTRUCTION BASELINE DATA & TIES
7-12	CONSTRUCTION PLANS & PROFILES
13	CONSTRUCTION PLAN - ENLARGEMENT BASS RIVER REST AREA
14	CURB TIE & GRADING PLAN
15	TRAFFIC PLAN
16	TRAFFIC SIGN SUMMARY SHEET
17-19	TEMPORARY TRAFFIC CONTROL PLANS
20-21	LANDSCAPE PLANS & DETAILS
22	DRAINAGE & UTILITY PLAN
23-32	CONSTRUCTION DETAILS
33-43	BRIDGE PLANS
44-65	CROSS SECTIONS - CCRT EXTENSION
66-68	CROSS SECTIONS - NORTH MAIN STREET



DESIGN DESIGNATION (CAPE COD RAIL TRAIL EXTENSION)

DESIGN SPEED	18 MPH
FUNCTIONAL CLASSIFICATION	SHARED USE PATH

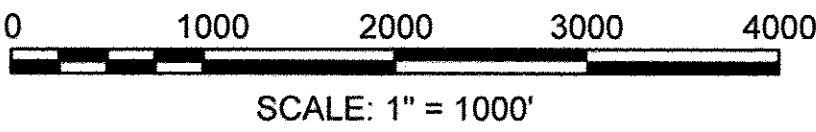
DESIGN DESIGNATION (NORTH MAIN STREET)

DESIGN SPEED	30 MPH
FUNCTIONAL CLASSIFICATION	URBAN MINOR ARTERIAL

DESIGN DESIGNATION (WHITE'S PATH)

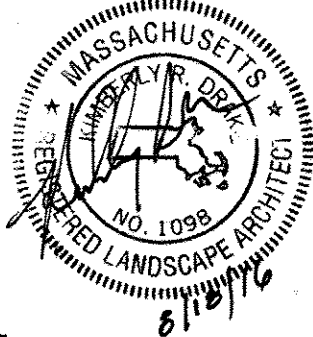
DESIGN SPEED	30 MPH
FUNCTIONAL CLASSIFICATION	URBAN MINOR ARTERIAL

DATE	DESCRIPTION	REV #



LENGTH OF PROJECT = 4,449.00 FEET = 0.843 MILES

PREPARED BY:
CDM SMITH
75 STATE STREET
BOSTON, MA 02109



COMMONWEALTH OF MASSACHUSETTS
PATRICK C. LEARY
REGISTERED PROFESSIONAL ENGINEER
No. 1098
PREPARED BY: 6/18/16
VANASSE HANGEN BRUSTLIN, INC.
101 WALNUT STREET
WATERTOWN, MA 02471

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR DATE












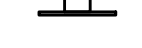



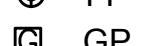








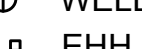

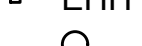







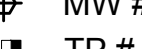

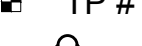








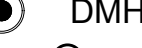





























































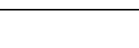
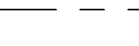
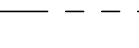
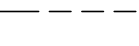
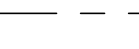
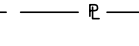
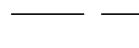










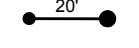







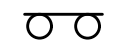

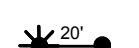










RECOMMENDED FOR APPROVAL








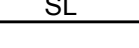



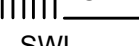

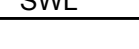

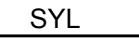









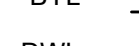

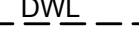

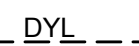
PATRICK C. LEARY 8-19-16
CHIEF ENGINEER DATE

APPROVED

8-23-16
HIGHWAY ADMINISTRATOR DATE

GENERAL SYMBOLS			EXISTING	PROPOSED	DESCRIPTION
EXISTING	PROPOSED	DESCRIPTION			
		JERSEY BARRIER ON BRIDGE OR JERSEY BARRIER			
		CATCH BASIN			
		GUTTER INLET			
		LEACHING BASIN			
		CATCH BASIN CURB INLET			
		FLARED END SECTION (FES)			
		FLAG POLE			
		GAS PUMP			
		MAIL BOX			
		POST SQUARE			
		POST CIRCULAR			
		WELL			
		ELECTRIC HANDHOLE			
		FENCE GATE POST			
		GAS GATE			
		BORING HOLE			
		MONITORING WELL			
		TEST PIT			
		HYDRANT			
		LIGHT POLE			
		COUNTY BOUND			
		GPS POINT			
		CABLE MANHOLE			
		DRAINAGE MANHOLE			
		ELECTRIC MANHOLE			
		GAS MANHOLE			
		MISC MANHOLE			
		SEWER MANHOLE			
		TELEPHONE MANHOLE			
		WATER MANHOLE			
		MASSACHUSETTS HIGHWAY BOUND			
		MONUMENT			
		STONE BOUND			
		TOWN OR CITY BOUND			
		TRAVERSE OR TRIANGULATION STATION			
		TROLLEY POLE OR GUY POLE			
		TRANSMISSION POLE			
		UTILITY POLE W/ FIREBOX			
		UTILITY POLE WITH DOUBLE LIGHT			
		UTILITY POLE W / 1 LIGHT			
		UTILITY POLE			
		BUSH			
		TREE			
		STUMP			
		SWAMP / MARSH			
		WATER GATE			
		PARKING METER			
		OVERHEAD CABLE/WIRE			
		CURBING			
		CONTOURS			
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)			
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)			
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)			
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)			
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)			
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)			
		TEMPORARY SUPPORT OF EXCAVATION			
		BALANCE STONE WALL			
		GUARD RAIL - STEEL POSTS			
		WOOD RAILING/SPLIT RAIL FENCE			
		CHAIN LINK OR METAL FENCE			
		STOCKADE FENCE			
		WOOD RAILING			
		COMPOST FILTER TUBE			
		TREE LINE OR LIMIT OF CLEARING AND GRUBBING			
		SAWCUT LINE			
		TOP OR BOTTOM OF SLOPE			
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY			
		BANK OF RIVER OR STREAM			
		BORDER OF WETLAND			
		100 FT WETLAND BUFFER			
		200 FT RIVERFRONT BUFFER			
		STATE HIGHWAY LAYOUT			
		TOWN OR CITY LAYOUT			
		COUNTY LAYOUT			
		RAILROAD SIDELINE			
		TOWN OR CITY BOUNDARY LINE			
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE			
		EASEMENT			
		RIP RAP SLOPE TREATMENT			
		BOULDER			
		PROP MATTING FOR EROSION CONTROL			

EXISTING	PROPOSED	DESCRIPTION
		RAILROAD SIGNAL
		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
		MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
		MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
-----	=====	TRAFFIC SIGNAL CONDUIT

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
		LEGEND "ONLY" - WHITE
		STOP LINE - 12"
		CROSSWALK - 12"
		SOLID WHITE LINE - 4"
		SOLID YELLOW LINE - 4"
		SINGLE YELLOW CHANNELIZING LINE
		BROKEN WHITE LINE
		BROKEN YELLOW LINE
		DOTTED WHITE LINE
		DOTTED YELLOW LINE
		DOTTED WHITE LINE EXTENSION
		DOTTED YELLOW LINE EXTENSION
		DOUBLE WHITE LINE
		DOUBLE YELLOW LINE - 4"

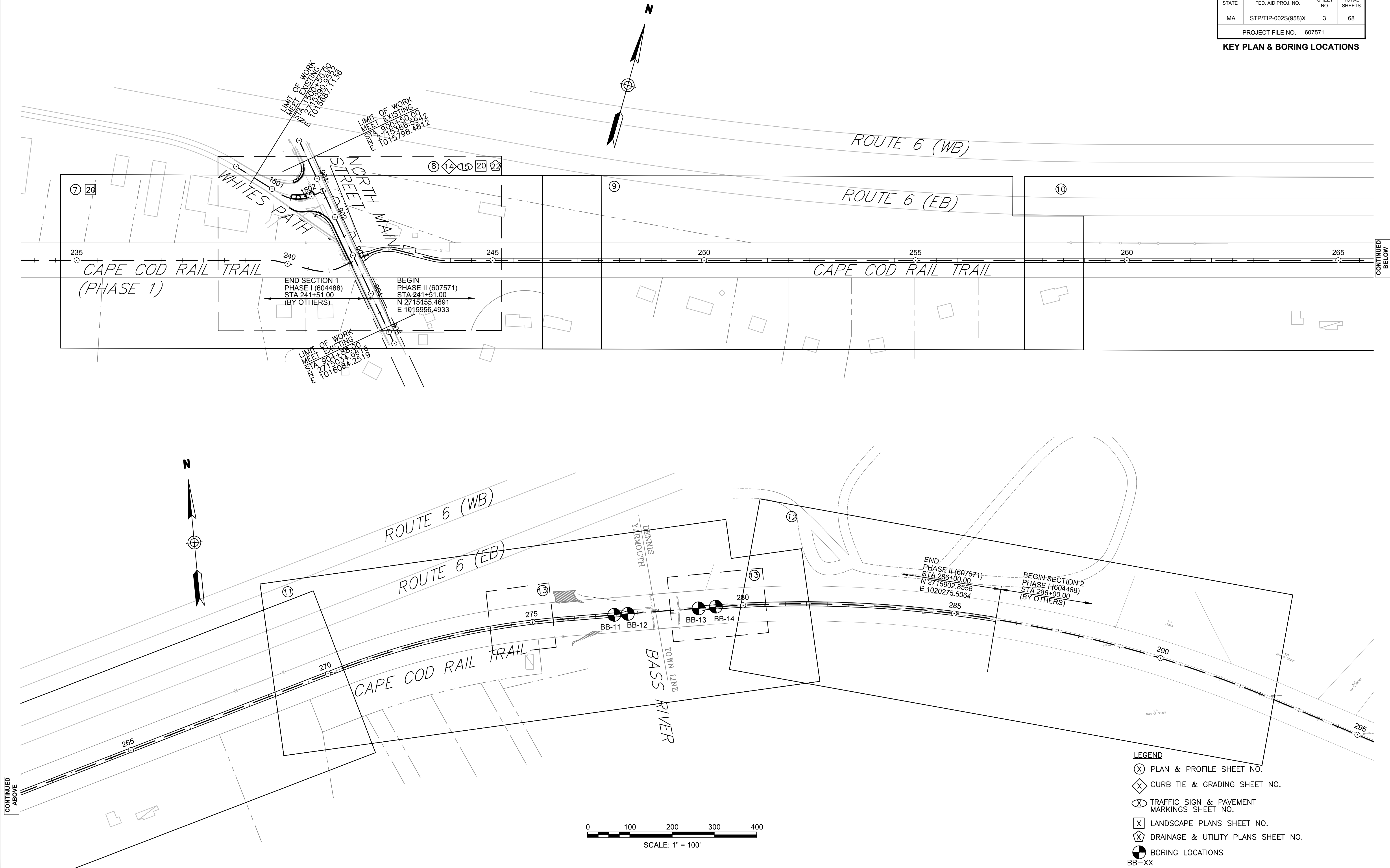
ABBREVIATIONS	
GENERAL	
ABAN	ABANDON
ADJ	ADJUST
APPROX	APPROXIMATE
BIT	BITUMINOUS
BD	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR	BRIDGE
CCRT	CAPE COD RAIL TRAIL
CEM	CEMENT
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
DIA	DIAMETER
EASE	EASEMENT
ELEV (or EL)	ELEVATION
EOP	EDGE OF PAVEMENT
EXIST	EXISTING
EXT	EXTENSION
FDN	FOUNDATION
GP	GATE POST
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HMA	HOT MIX ASPHALT
L&S	LOAM AND SEED
LT, L	LEFT
MAX	MAXIMUM
MHW	MEAN HIGH WATER
MLW	MEAN LOW WATER
MIN	MINIMUM
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
PERM	PERMANENT
PROP	PROPOSED
PVM/T	PAVEMENT
REM	REMOVE
REMOD	REMODEL
RET	RETAIN
RRFB	RECTANGULAR RAPID FLASH BEACON
R&D	REMOVE AND DISCARD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT, R	RIGHT
SGE	SLOPED GRANITE EDGING
SHLDR	SHOULDER
SYCHL	SOLID YELLOW CHANNELIZED LINE
STA	STATION
SUP	SHARED USE PATH
TEMP	TEMPORARY
TOB	TOP OF BANK
TOS	TOP OF SLOPE
TS	TRAFFIC SIGNAL
TYP	TYPICAL
UTILITIES	
CIP	CAST IRON PIPE
CIT	CHANGE IN TYPE
COND	CONDUIT
DIP	DUCTILE IRON PIPE
DB	DIRECT BURIAL
FES	FLARED END SECTION
F&C	FRAME & COVER
F&G	FRAME & GRATE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HW	HEADWALL
HYD	HYDRANT
INV	INVERT
PB	PULLBOX
PVC	POLYVINYL CHLORIDE PIPE
PWW	PAVED WATER WAY
RCP	REINFORCED CONCRETE PIPE
TSV&B	TAPPING SLEEVE, VALVE, & BODY
UP	UTILITY POLE
ALIGNMENT/GRADING	
BC	BOTTOM OF CURB
CC	CENTER OF CURVE
HP	HIGH POINT
LP	LOW POINT
PC	POINT OF CURVE
PI	POINT OF INTERSECTION
PNT	POINT
PCC	POINT OF COMPOUND CURVE
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENT
25.45	SPOT ELEVATION
PROFILES	
AD	ALGEBRAIC DIFFERENCE IN RATES OF GRADE
ELEV	ELEVATION
HSD	HORIZONTAL SIGHT DISTANCE
K	RATE OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVC	POINT OF VERTICAL CURVE
PVT	POINT OF VERTICAL TANGENT
PVRC	POINT OF VERTICAL REVERSE CURVE
PVCC	POINT OF VERTICAL COMPOUND CURVE
SSD	STOPPING SIGHT DISTANCE
VC	VERTICAL CURVE

YARMOUTH & DENNIS
CAPE COD RAIL TRAIL EXTENSION - PHASE II

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	2	68
PROJECT FILE NO. 607571			

LEGEND, GENERAL NOTES & ABBREVIATIONS

- TOPOGRAPHICAL INFORMATION FROM A SURVEY BY THE TOWN OF YARMOUTH & SURVEY MAPPING CONSULTANTS, BRAINTREE, MASSACHUSETTS BETWEEN THE DATES OF JUNE 2010 AND FEBRUARY 2014 (HORIZONTAL DATUM: NAD83, VERTICAL DATUM: NAVD88).
- THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. CONTRACTOR SHALL NOTIFY "DIG-SAFE" (1-888-344-7233) AT LEAST 72 HOURS BEFORE EXCAVATING.
- WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
- THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE STRUCTURES AS NECESSARY FOR CHANGES IN GRADE, AND RESET ALL WATER AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH SURFACE GRADE. REQUIRED NEW MASONRY SHALL BE CLAY BRICK CONFORMING TO M4.05.2.
- THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
- EXISTING UTILITY POLES WILL BE RELOCATED BY OTHERS.
- TREES AND SHRUBS WITHIN THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON APPROVAL OF THE ENGINEER.
- AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT NO EXPENSE TO THE OWNER.
- THE TERM "PROPOSED" (PROP) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R).
- JOINTS BETWEEN NEW BITUMINOUS CONCRETE ROADWAY PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH BITUMEN AND BACKSAND
- ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS INDICATED OTHERWISE ON THE DRAWINGS
- ALL LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF 0.01 FOOT PER FOOT (MINIMUM) UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- ALL EXISTING GRANITE CURB & EDGING SHALL BE RE-USED IN THE PROPOSED WORK, EXCEPT CURVED PIECES OF A DIFFERENT RADIUS THAN PROPOSED CURB.
- ALL EXISTING STATE, COUNTY, CITY, AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATION ARE NOT GUARANTEED.
- DRAINAGE ELEVATIONS ARE PROVIDED FOR DESIGN PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED DRAINAGE DESIGN. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER, ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTABILITY OF THE DRAINAGE SYSTEM SHALL ANY STRUCTURES BE ORDERED. ANY FIELD ADJUSTMENTS TO LINE & GRADE UP TO A DEPTH OF 5' SHALL BE INCLUDED IN THE COST OF THE PIPE. PIPE EXCAVATION GREATER THAN 5' WILL BE PAID UNDER CLASS B TRENCH EXCAVATION.
- ALL EXISTING STONE OR WOOD MILE MARKERS AND WHISTLE POSTS SHALL BE REMOVED AND RESET AS DIRECTED BY THE ENGINEER. ALL OTHER EXISTING RAILROAD EQUIPMENT SHALL BE REMOVED AS REQUIRED BY THE ENGINEER.
- ALL EXISTING RAILROAD BOUNDS, WITHIN THE LIMITS OF WORK, SHALL BE ADJUSTED TO FINISH GRADE. EXISTING BOUNDS WITHIN THE SHARED USE PATH PAVEMENT SHALL BE SET FLUSH WITH THE FINISH PAVEMENT SURFACE. ALL EXISTING DAMAGED BOUNDS SHALL BE REPLACED WITH NEW BOUNDS AND SET TO FINISH GRADE.



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	4	68
PROJECT FILE NO. 607571			

TYPICAL SECTIONS & PAVEMENT NOTES

PAVEMENT NOTES

PROPOSED FULL DEPTH SHARED USE PATH (SUP) PAVEMENT
(ON EXISTING RAILROAD EMBANKMENT)

SURFACE: 1.5" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER
BASE: 2.5" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0)
SUBBASE: 4" GRAVEL BORROW, TYPE b

PROPOSED FULL DEPTH SHARED USE PATH PAVEMENT
(OFF EXISTING RAILROAD EMBANKMENT)

SURFACE: 1.5" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER
BASE: 2.5" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0)
SUBBASE: 12" GRAVEL BORROW, TYPE b

PROPOSED FULL DEPTH PAVEMENT

SURFACE: 1.5" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER
2.5" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0)
BASE: 4.0" SUPERPAVE BASE COURSE 37.5 (SBC-37.5)
SUBBASE: 4" DENSE GRADED CRUSHED STONE OVER
8" GRAVEL BORROW, TYPE b

PROPOSED FULL DEPTH PAVEMENT (LESS THAN 4.0' WIDE)

SURFACE: 1.5" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER
2.5" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0)
BASE: 8" HIGH EARLY STRENGTH CEMENT
CONCRETE BASE COURSE
SUBBASE: 8" GRAVEL BORROW, TYPE b

PROPOSED PAVEMENT MILLING AND OVERLAY

SURFACE: 1.5" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER
1.5" MAXIMUM PAVEMENT MICROMILLING

LEVELING COURSE: VARIABLE DEPTH (1" MIN) SUPERPAVE LEVELING COURSE 9.5 (SLC-9.5)
ASPHALT EMULSION FOR TACK COAT AT 0.07 GAL/SY

PROPOSED HOT MIX ASPHALT DRIVEWAY

SURFACE: 1.5" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER
2.0" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5)
FOUNDATION: 8" GRAVEL BORROW, TYPE b

PROPOSED HOT MIX ASPHALT WALK/RAISED MEDIAN

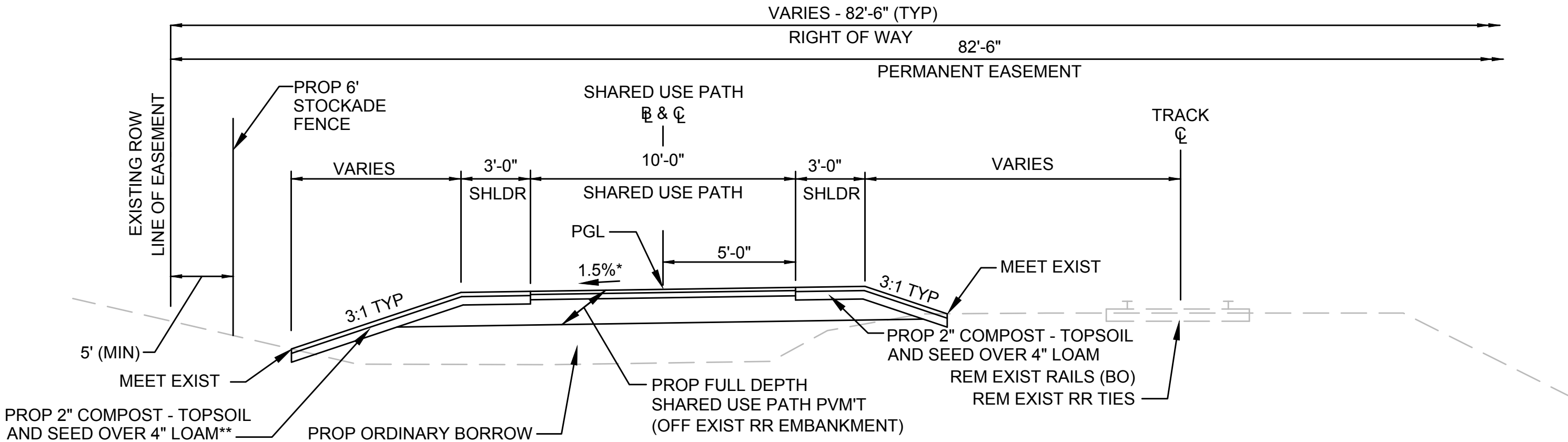
SURFACE: 1.0" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER
1.5" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5)
FOUNDATION: 8" GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE WHEELCHAIR RAMP/ISLAND/WALK

SURFACE: 4" CEMENT CONCRETE
AIR ENTRAINED 4000 PSI, 3/4", 610
FOUNDATION: 8" GRAVEL BORROW, TYPE b

PAVEMENT NOTES:

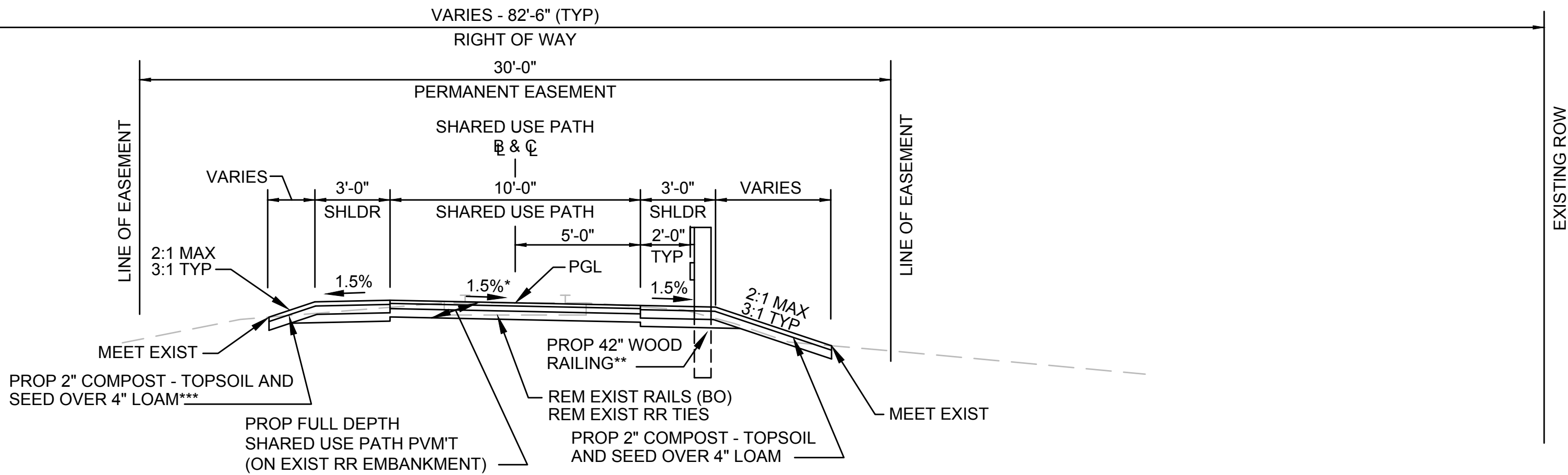
- ALL SUPERPAVE HOT MIX ASHALT SHALL BE A WARM MIX ASPHALT TECHNOLOGY.
- ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED AT 0.07 GALLONS PER SQUARE YARD TO MILLED SURFACES AND 0.05 GALLONS PER SQUARE YARD TO SMOOTH SURFACES PRIOR TO PAVING. HMA JOINT SEALANT SHALL BE APPLIED TO COLD JOINTS PRIOR TO PAVING.



TYPICAL SHARED USE PATH SECTION

STA 242+00± TO STA 243+75±
FULL WIDTH NORTH OF TRACK

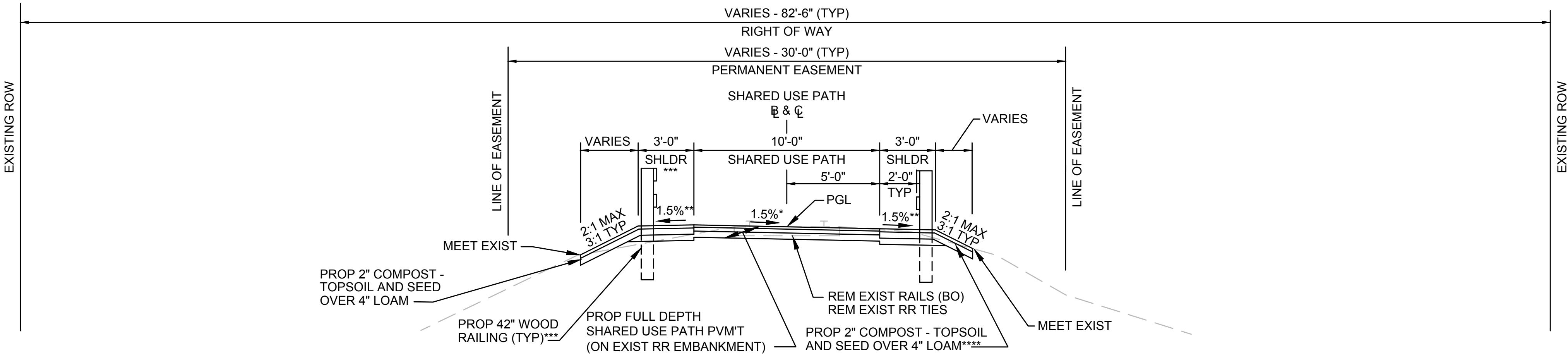
* 0.5% TOLERANCE FOR CONSTRUCTION
** SLOPE SEED MIX B1 SHALL BE USED ON ALL
SLOPES 3:1 AND STEEPER



TYPICAL SHARED USE PATH SECTION

STA 243+75± TO STA 250+25±
STA 266+75± TO STA 275+30±
STA 279+50± TO STA 282+50±
FULL WIDTH ON TRACK

* 0.5% TOLERANCE FOR CONSTRUCTION
** PROP WOOD RAILING RT STA 279+40 TO 279+75, 281+88 TO 282+63
*** SLOPE SEED MIX B1 SHALL BE USED ON ALL
SLOPES 3:1 AND STEEPER



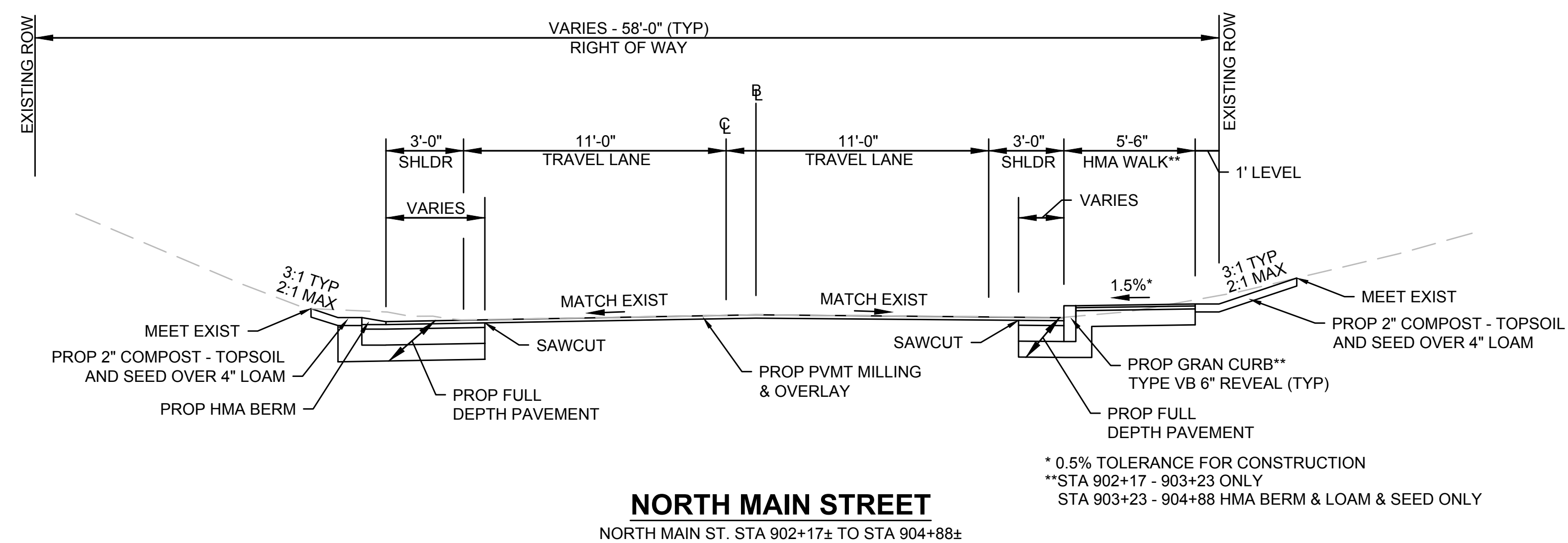
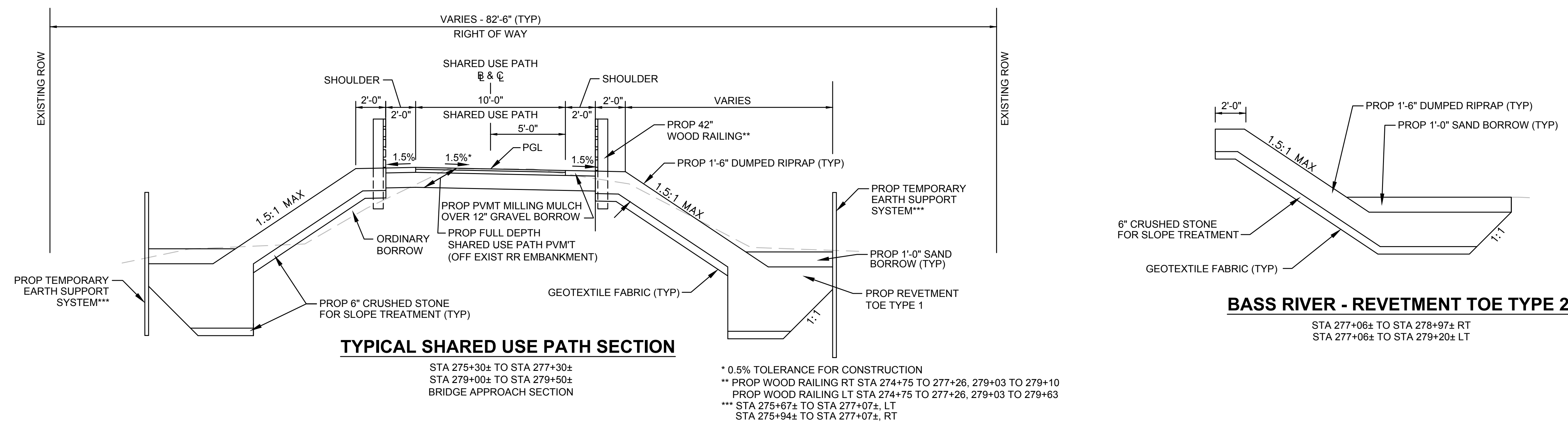
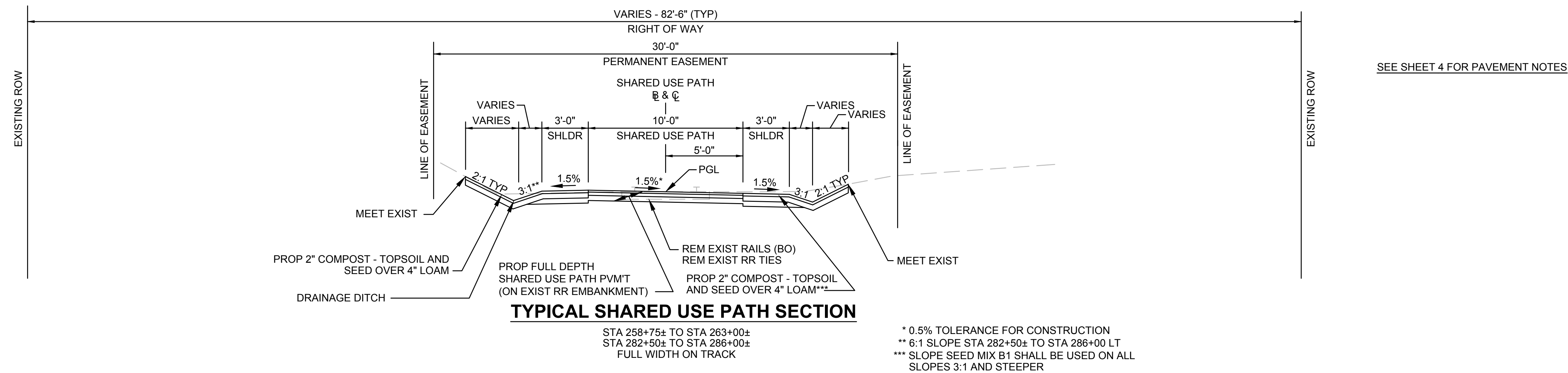
TYPICAL SHARED USE PATH SECTION

STA 250+25± TO STA 258+75±
STA 263+00± TO STA 266+75±
FULL WIDTH ON TRACK

* 0.5% TOLERANCE FOR CONSTRUCTION
** 6:1 SLOPED SHOULDER STA 255+70 TO 257+10 LT/RT, 264+80 TO 265+15 RT
*** PROP WOOD RAILING RT STA 252+65 TO 256+50, 264+00 TO 265+80
PROP WOOD RAILING LT STA 250+50 TO 258+25, 262+75 TO 268+70
**** SLOPE SEED MIX B1 SHALL BE USED ON ALL
SLOPES 3:1 AND STEEPER

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	5	68
PROJECT FILE NO. 607571			

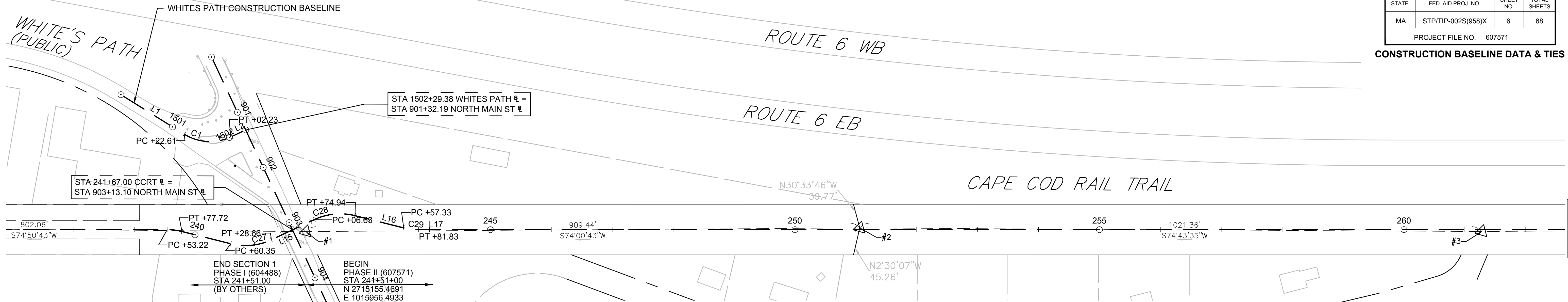
TYPICAL SECTIONS & PAVEMENT NOTES



YARMOUTH & DENNIS
CAPE COD RAIL TRAIL EXTENSION - PHASE II

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	6	68
PROJECT FILE NO. 607571			

CONSTRUCTION BASELINE DATA & TIES



WHITES PATH CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	1500+00.00	2715305.0010	1015639.1270		S73° 41' 07"E 122.61'	1501+22.61	2715270.5575	1015756.8012
C1	1501+22.61	2715270.5575	1015756.8012	R=80.00' Δ=57°01'31" L=79.62' T=43.46'		1502+02.23	2715286.6948	1015831.4533
L2	1502+02.23	2715286.6948	1015831.4533		N49° 17' 23"E 27.14'	1502+29.38	2715304.3981	1015852.0277

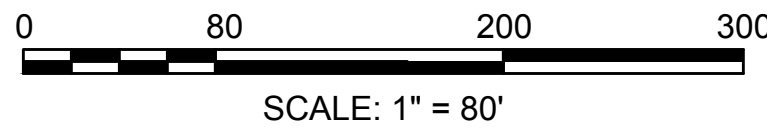
TRAVERSE POINTS				
POINT #	NORTHING	EASTING	STATION	OFFSET
1	2715170.3274	1015992.1101	241+85.69	11.95 RT
2	2715420.8332	1016866.3624	251+06.49	2.83 LT
3	2715689.8893	1017851.6513	261+27.84	3.15 RT
4	2715935.4540	1018708.4315	270+19.10	2.83 LT
5	2716004.4940	1019159.3203	274+75.68	2.59 LT

NORTH MAIN STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L3	900+00.00	2715404.4860	1015765.8590		S40° 43' 34"E 530.27'	905+30.27	2715002.6310	1016111.8280

TRAVERSE POINTS				
POINT #	NORTHING	EASTING	STATION	OFFSET
6	2716003.1207	1019280.1094	275+96.39	0.86 LT
7	2716001.4055	1019380.0947	276+96.39	0.76 LT
8	2715999.7003	1019480.0799	277+96.39	0.68 LT
9	2715998.3645	1019579.9724	278+96.29	0.96 LT
10	2715994.9785	1019679.8600	279+96.21	0.56 LT
11	2715988.5017	1019779.6403	280+96.19	0.54 LT
12	2715978.5527	1019879.1361	282+46.17	0.52 LT
13	2715965.1406	1019978.2274	282+96.15	0.51 LT
14	2715948.2646	1020076.7941	283+96.14	0.48 LT
15	2715927.9737	1020174.7058	284+96.12	0.46 LT
16	2715904.2671	1020271.8527	285+96.11	0.43 LT
17	2715877.1937	1020368.1043	286+96.08	0.41 LT

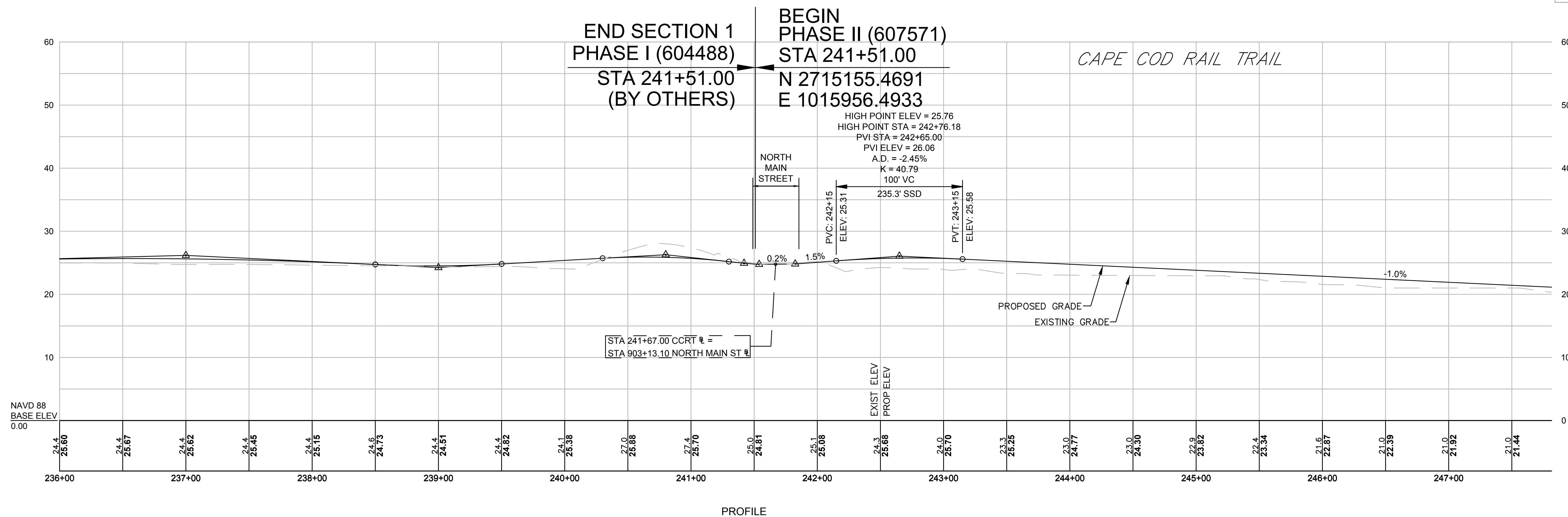
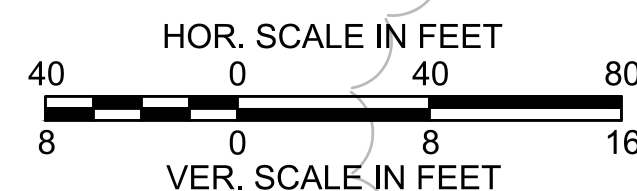
CAPE COD RAIL TRAIL EXT (1) CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C27	240+60.35	2715118.0392	1015878.5930	R=100.00' Δ=39°08'18" L=68.31' T=35.55'		241+28.66	2715142.2004	1015941.0729
L15	241+28.66	2715142.2004	1015941.0729		N49° 17' 21"E 77.97'	242+06.63	2715193.0552	1016000.1747
C28	242+06.63	2715193.0552	1016000.1747	R=100.00' Δ=39°08'18" L=68.31' T=35.55'		242+74.94	2715217.2164	1016062.6546
L16	242+74.94	2715217.2164	1016062.6546		N88° 25' 39"E 82.39'	243+57.33	2715219.4774	1016145.0159
C29	243+57.33	2715219.4774	1016145.0159	R=100.00' Δ=14°02'10" L=24.50' T=12.31'		243+81.83	2715223.1275	1016169.1784
L17	243+81.83	2715223.1275	1016169.1784		N74° 23' 29"E 2636.44'	270+18.27	2715932.5046	1018708.3931
C30	270+18.27	2715932.5046	1018708.3931	R=1910.00' Δ=16°32'06" L=551.21' T=277.53'		275+69.48	2716002.6924	1019253.1898
L18	275+69.48	2716002.6924	1019253.1898		S89° 04' 25"E 337.98'	279+07.46	2715997.2280	1019591.1280
C31	279+07.46	2715997.2280	1019591.1280	R=2865.00' Δ=27°29'50" L=1374.96' T=700.99'		292+82.42	2715652.2339	1020908.5089

- NOTES:
- POINTS, BEARINGS AND DISTANCES SHOWN ARE REFERENCING THE SURVEY TRAVERSE.
 - REFER TO CHART FOR ALL CAPE COD RAIL TRAIL EXT (1) CONSTRUCTION BASELINE DATA, SHOWN WITH TAG NUMBERS ON THE PLAN.



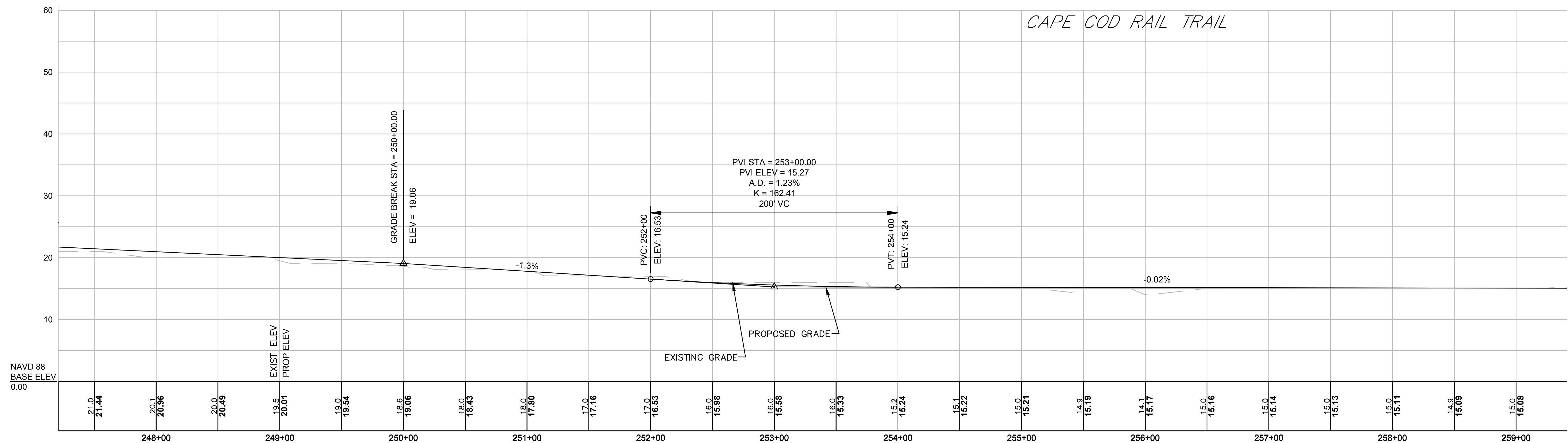
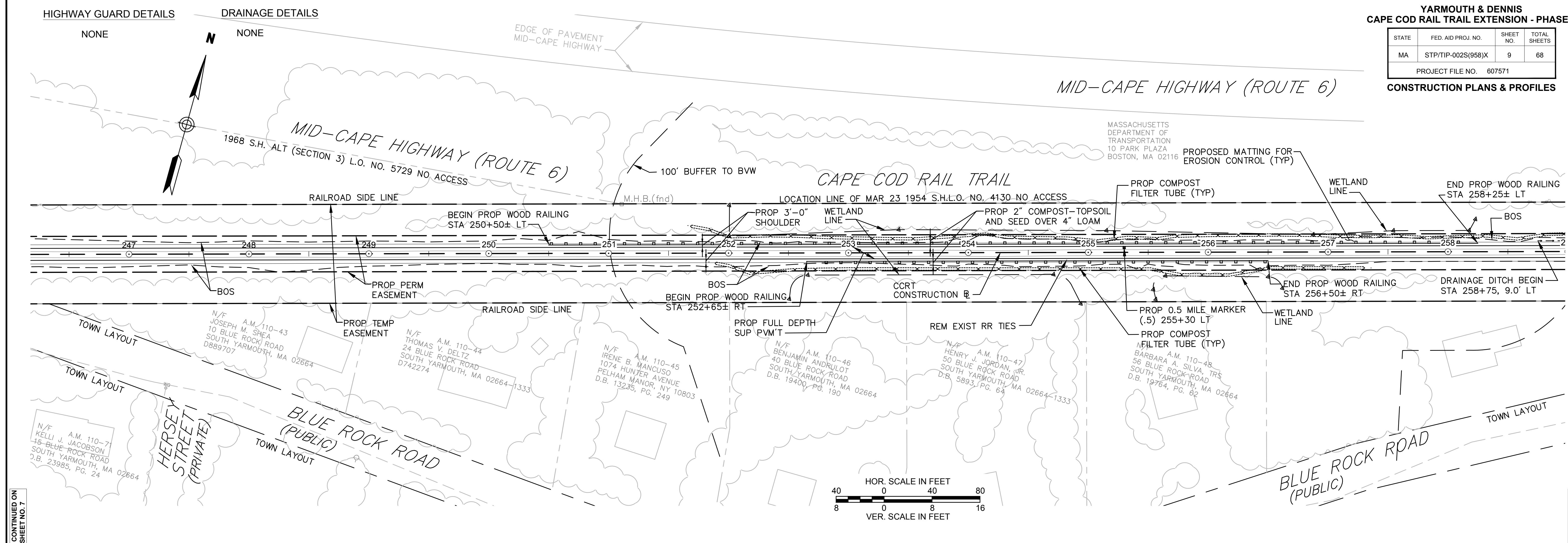
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	7	68
PROJECT FILE NO. 607571			

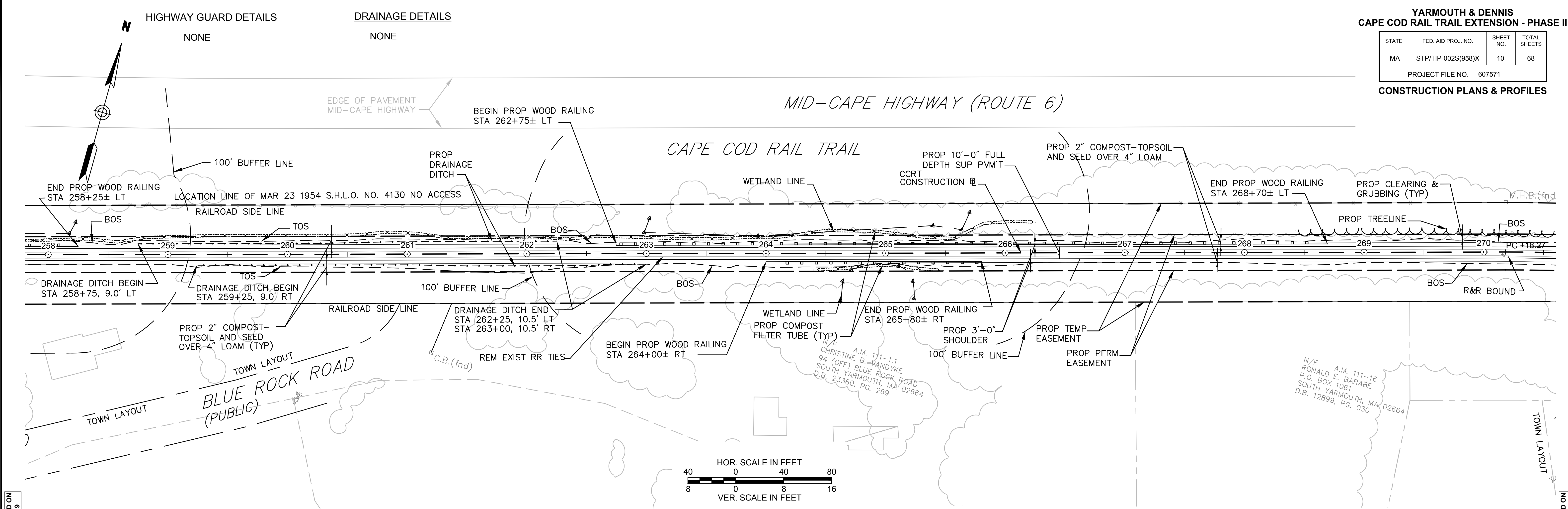
SEE SHEET 22



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	9	68
PROJECT FILE NO. 607571			

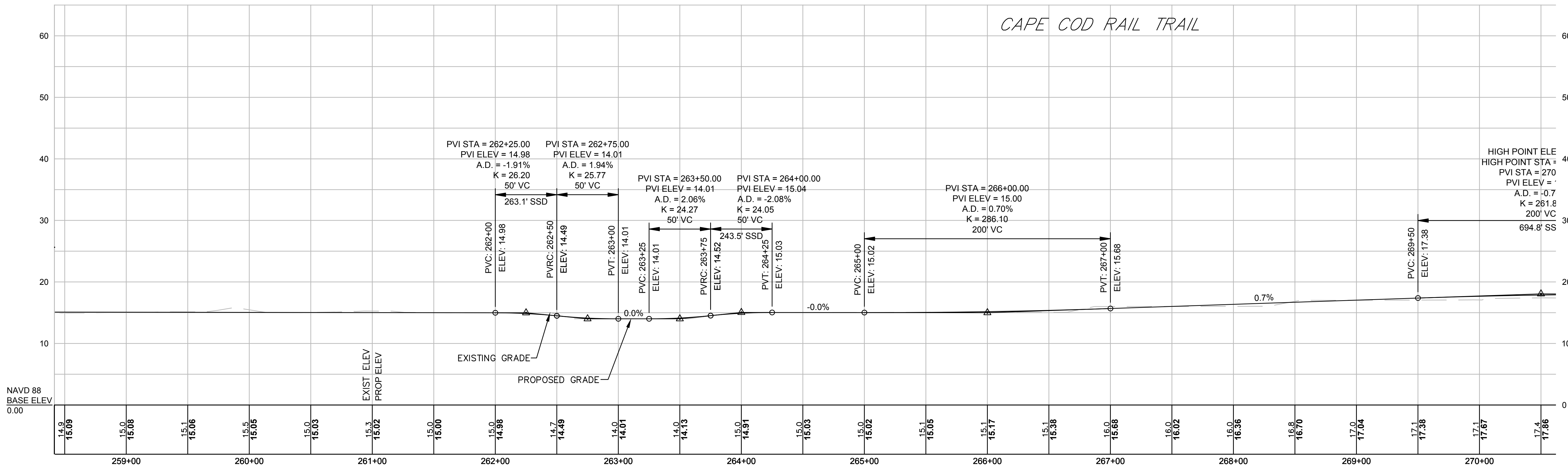
CONSTRUCTION PLANS & PROFILES:





CONTINUED ON
SHEET NO. 9

CONTINUED ON
SHEET NO. 11



HIGHWAY GUARD DETAILS

DRAINAGE DETAILS

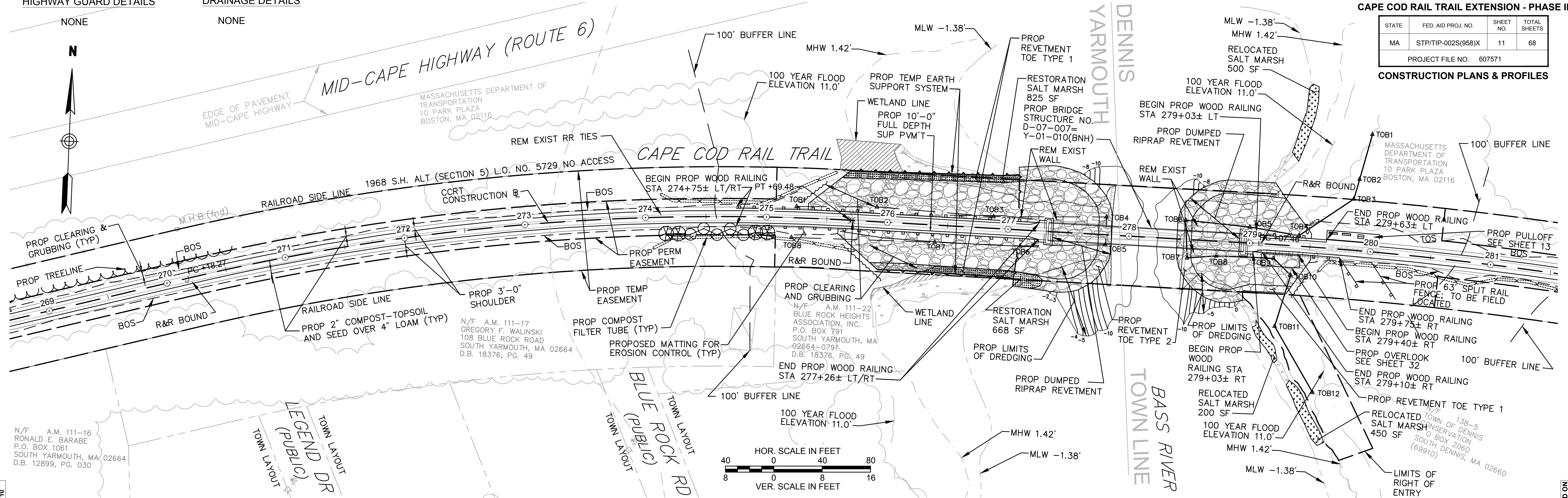
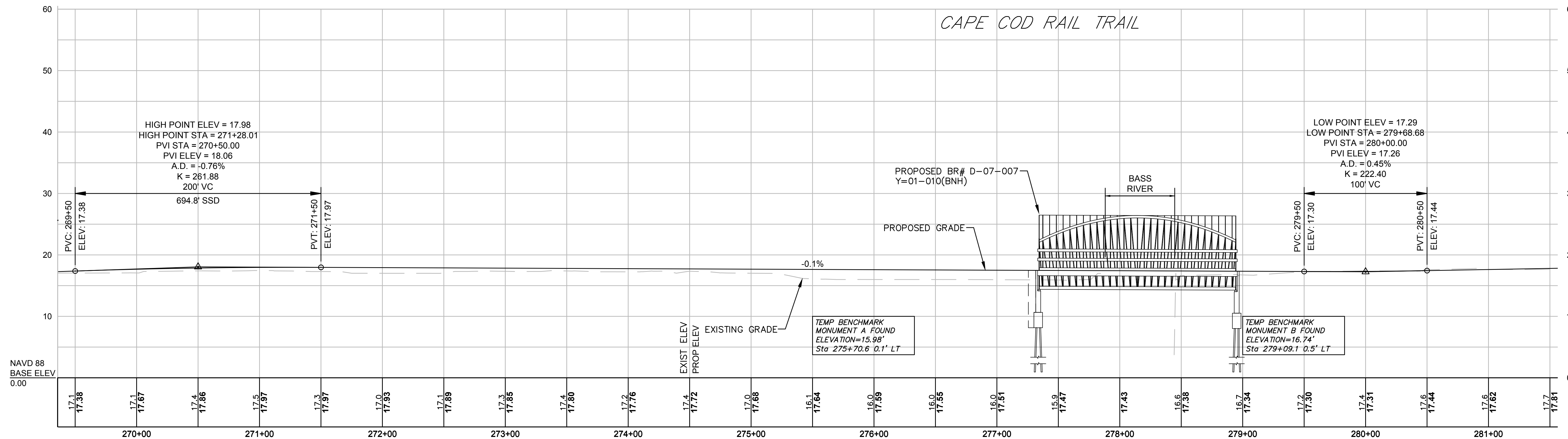
NONE

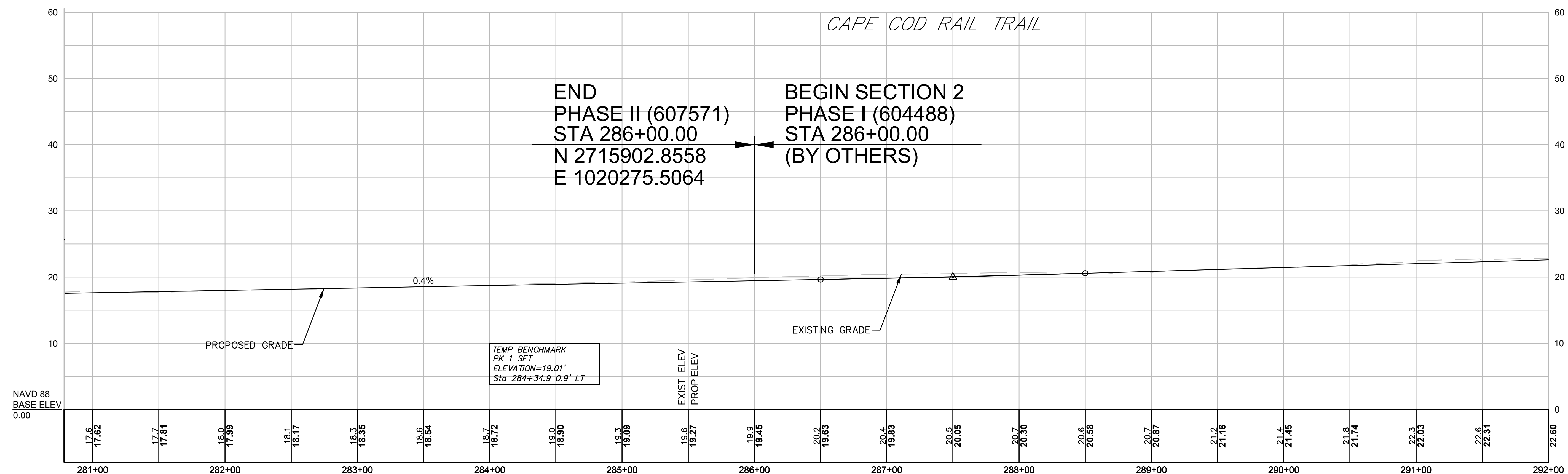
NONE

YARMOUTH & DENNIS
CAPE COD RAIL TRAIL EXTENSION - PHASE II

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	11	68
PROJECT FILE NO. 607571			

CONSTRUCTION PLANS & PROFILES

CONTINUED ON
SHEET NO. 10CONTINUED ON
SHEET NO. 12

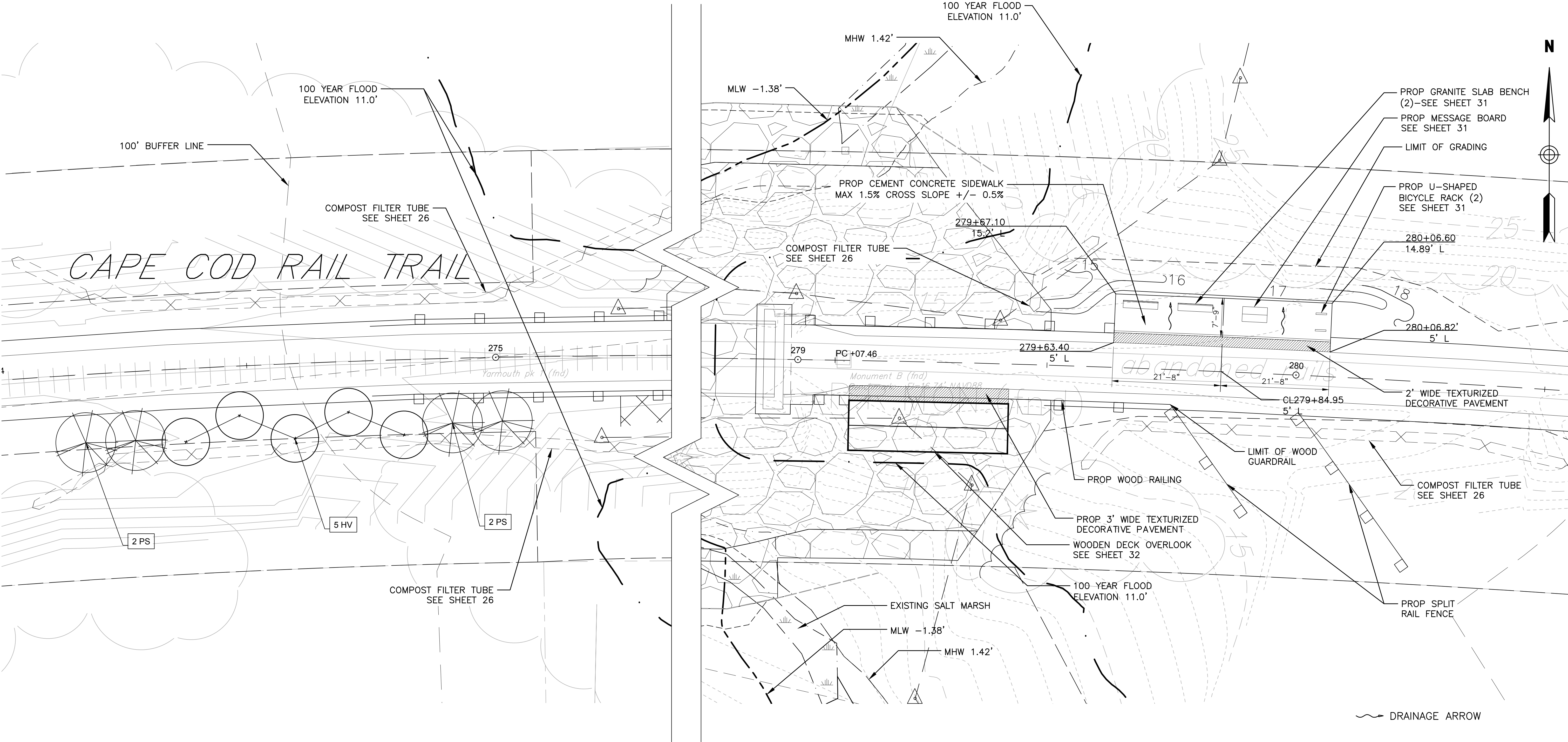


MASTER PLANT SUMMARY LIST						
QTY.	KEY	BOTANICAL NAME	COMMON NAME	UNIT.	SIZE	SPACING
EVERGREEN TREES						
4	PS	PINUS STROBUS	PINE WHITE	EA	5-6' H	10 FT O.C.
SHADE TREES						
5	HV	HAMAMELIS VIRGINIANA	WITCH HAZEL SPRING BLOOMING	EA	6-7' HTL	12 FT O.C.

YARMOUTH & DENNIS
CAPE COD RAIL TRAIL EXTENSION - PHASE II

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	13	68
PROJECT FILE NO. 607571			

CONSTRUCTION PLAN - ENLARGEMENT
BASS RIVER REST AREA



BASS RIVER REST AREA AND
PROPERTY SCREENING PLANTING PLAN

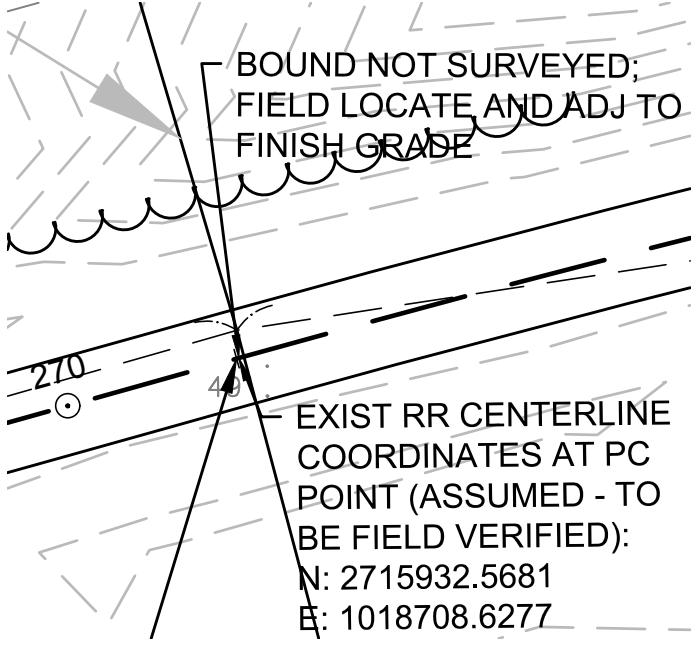
10 0 10 20

SCALE IN FEET

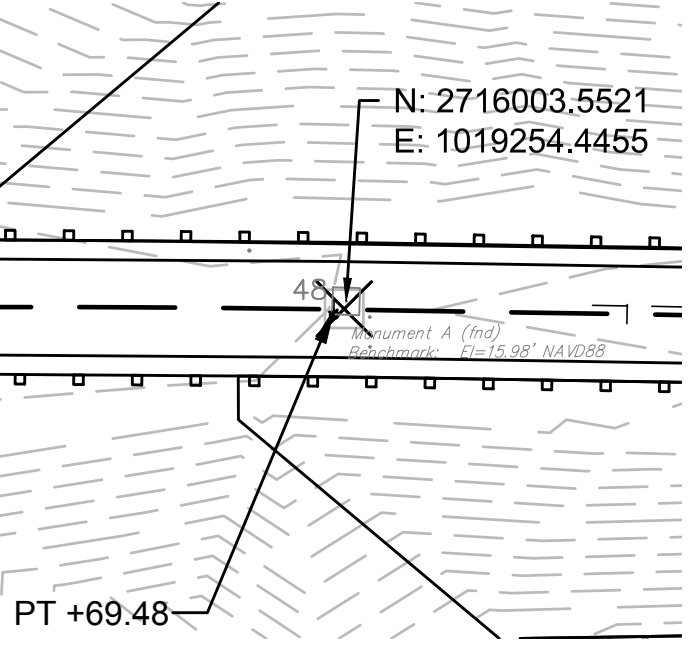
YARMOUTH & DENNIS
CAPE COD RAIL TRAIL EXTENSION - PHASE II

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	14	68
PROJECT FILE NO. 607571			

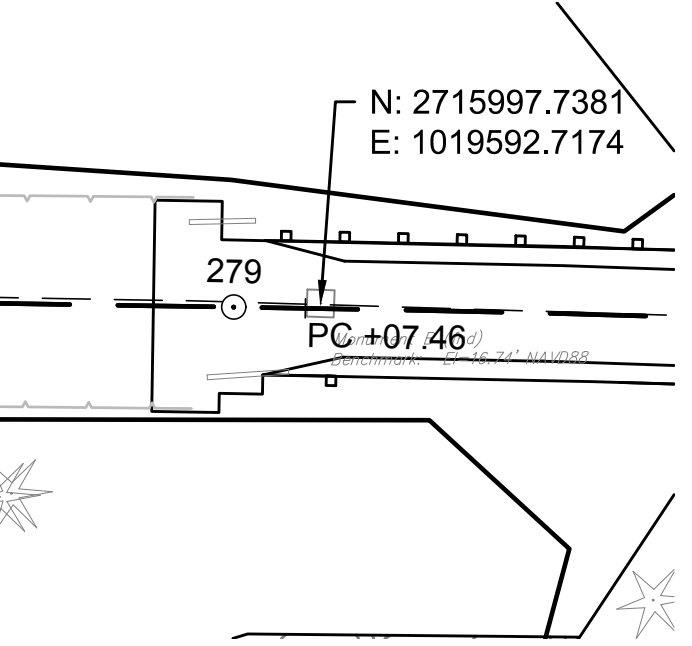
CURB TIE & GRADING PLAN



BOUND R&R
STA 270+20

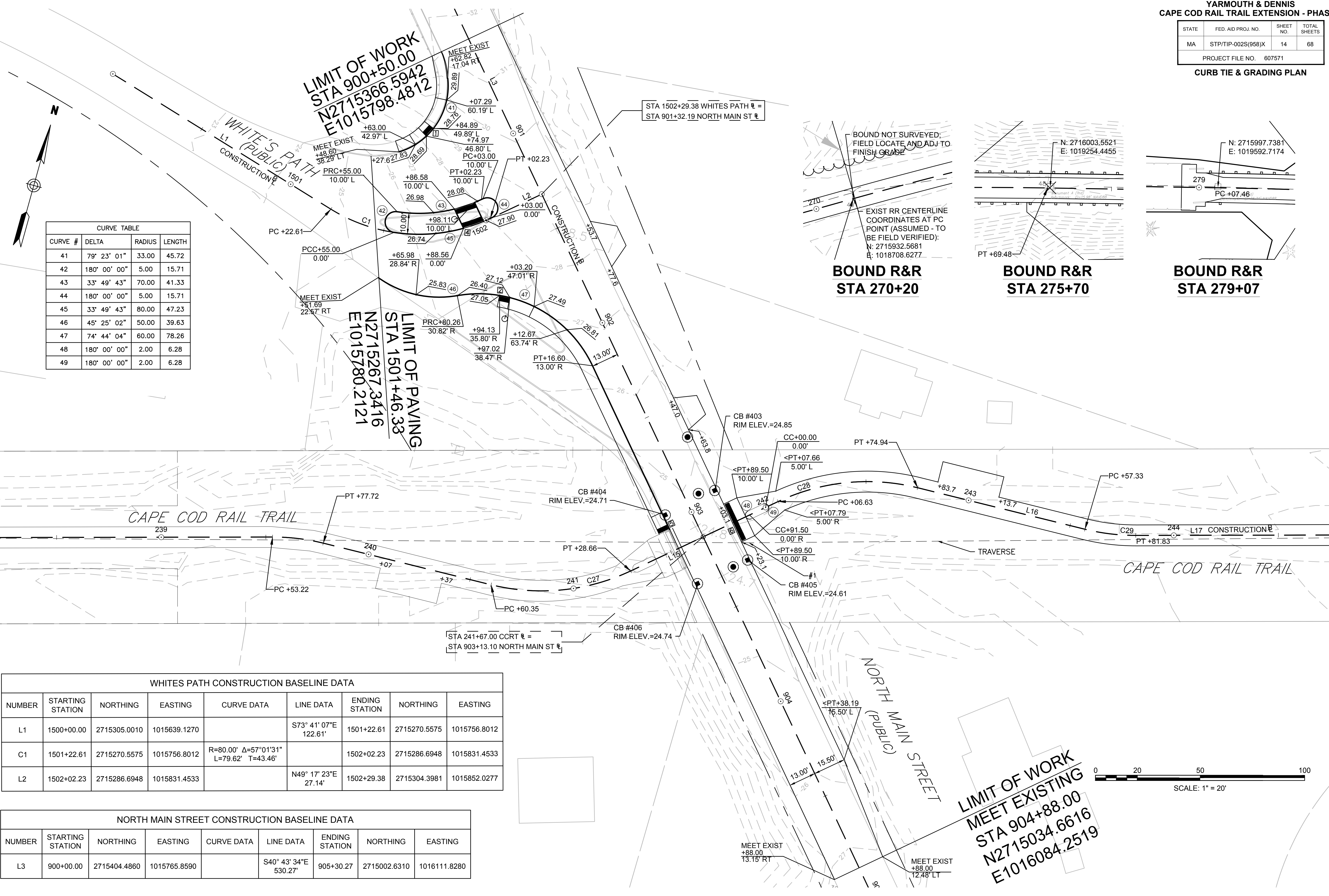
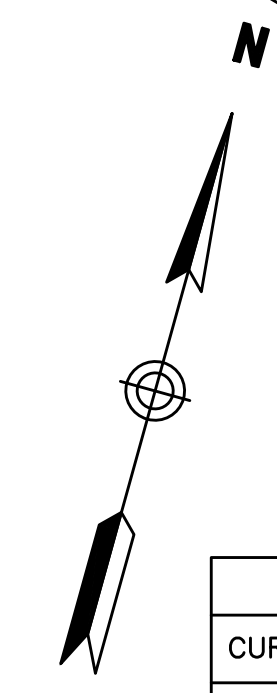


BOUND R&R
STA 275+70



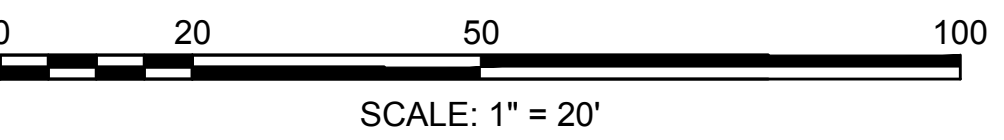
BOUND R&R
STA 279+07

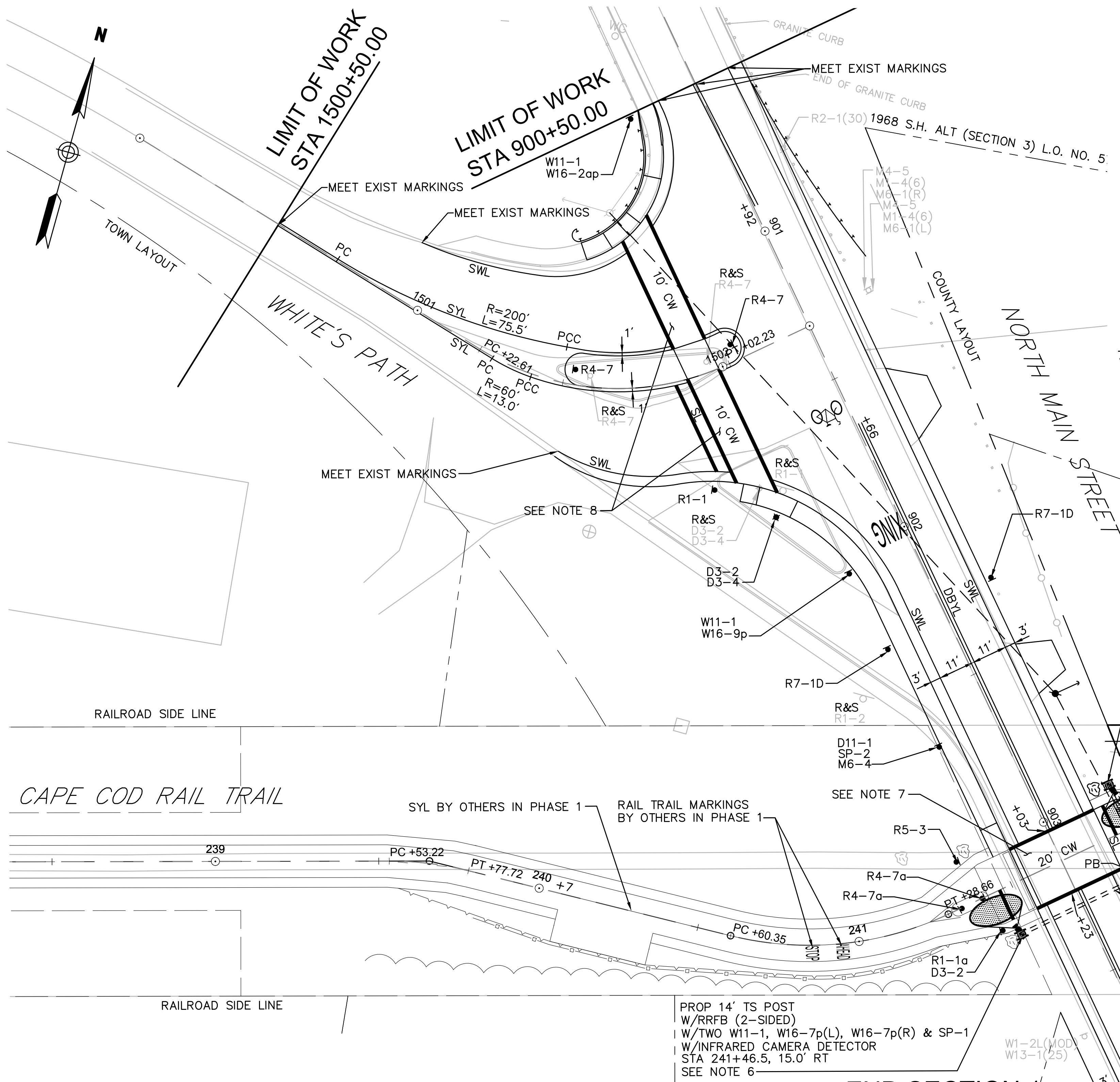
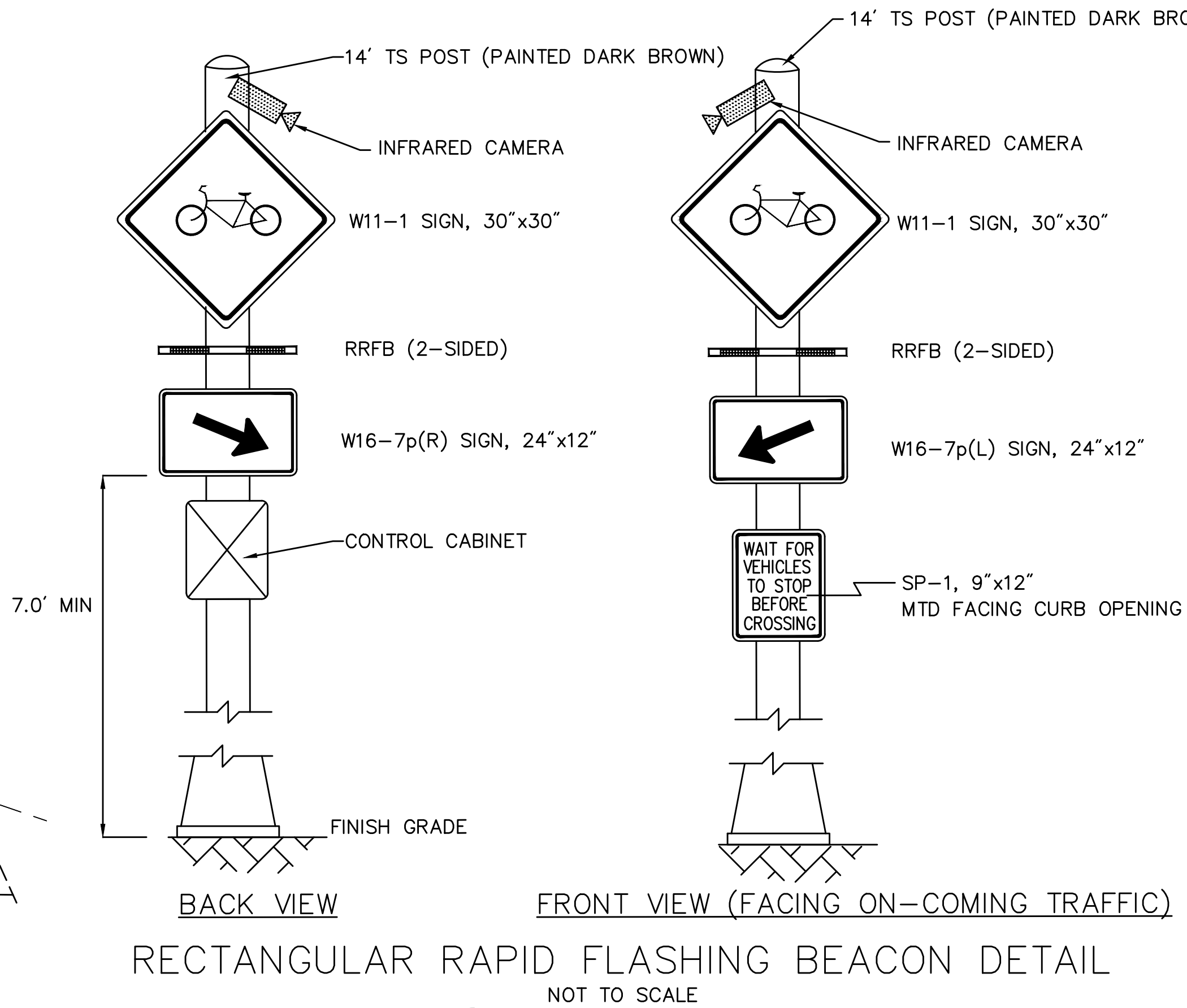
CURVE TABLE				
CURVE #	DELTA	RADIUS	LENGTH	
41	79° 23' 01"	33.00	45.72	
42	180° 00' 00"	5.00	15.71	
43	33° 49' 43"	70.00	41.33	
44	180° 00' 00"	5.00	15.71	
45	33° 49' 43"	80.00	47.23	
46	45° 25' 02"	50.00	39.63	
47	74° 44' 04"	60.00	78.26	
48	180° 00' 00"	2.00	6.28	
49	180° 00' 00"	2.00	6.28	



WHITES PATH CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	1500+00.00	2715305.0010	1015639.1270		S73° 41' 07"E 122.61'	1501+22.61	2715270.5575	1015756.8012
C1	1501+22.61	2715270.5575	1015756.8012	R=80.00' Δ=57°01'31" L=79.62' T=43.46'		1502+02.23	2715286.6948	1015831.4533
L2	1502+02.23	2715286.6948	1015831.4533		N49° 17' 23"E 27.14'	1502+29.38	2715304.3981	1015852.0277

NORTH MAIN STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L3	900+00.00	2715404.4860	1015765.8590		S40° 43' 34"E 530.27'	905+30.27	2715002.6310	1016111.8280







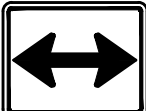



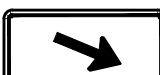



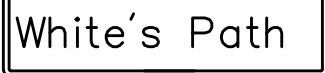
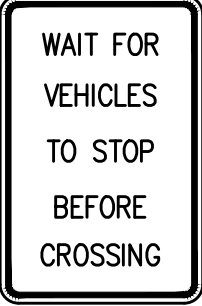





LIST OF MAJOR ITEMS REQUIRED		
NORTH MAIN STREET AT CAPE COD RAIL TRAIL		
ITEM NO.	QUANTITY	DESCRIPTION
824.402	1	SIDE OF POST MOUNTED CONTROL CABINET
	2	14' TS POST (PAINTED DARK BROWN), INCLUDING FOUNDATION
	4	RECTANGULAR RAPID FLASHING BEACONS (RRFB), 2-SIDED, L.E.D.
	2	INFRA RED CAMERA W/INTERFACE & CABLES
	1	SERVICE CONNECTION (OVERHEAD) W/1 POLYMER CONCRETE HANDHOLE
	1	PULL BOX-12"x12"

PLUS NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING RRFB SYSTEM.

0 20 50 100
SCALE: 1" = 20'

IDENTIFI- CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)		AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK- GROUND	LEGEND	BORDER				
R1-1	30"	30"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			1	RED	WHITE	WHITE	P5-1	5.18		5.18
R1-1a	18"	18"					2	RED	WHITE	WHITE	2 MTD W/OTHERS	1.86		3.72
R4-7	24"	30"					2	WHITE	BLACK	BLACK	P5-2	5.00		10.00
R4-7a	18"	24"					4	WHITE	BLACK	BLACK	P5-4	3.00		12.00
R5-3	24"	24"					2	WHITE	BLACK	BLACK	P5-2	4.00		8.00
R7-1D	12"	18"					4	WHITE	RED	RED	P5-4	1.50		6.00
M6-4	21"	15"					2	GREEN	WHITE	WHITE	2 MTD W/OTHERS	2.19		4.38
W11-1	30"	30"					8	YELLOW	BLACK	BLACK	P5-4 4 MTD ON TS POST	6.25		50.00
W16-2ap	24"	12"					2	YELLOW	BLACK	BLACK	2 MTD W/OTHERS	2.00		4.00
W16-7p(L)	24"	12"					2	YELLOW	BLACK	BLACK	2 MTD ON TS POST	2.00		4.00
W16-7p(R)	24"	12"					2	YELLOW	BLACK	BLACK	2 MTD ON TS POST	2.00		4.00
W16-9p	24"	12"					2	YELLOW	BLACK	BLACK	2 MTD W/OTHERS	2.00		4.00
D11-1	24"	18"					2	GREEN	WHITE	WHITE	P5-2	3.00		6.00
D3-2	48"	12"		6/4	3 3	N/A	3	GREEN	WHITE	WHITE	P5-3	INCLUDED UNDER ITEM 874		
D3-4	42"	12"		6/4	3 3	N/A	1	GREEN	WHITE	WHITE	1 MTD W/OTHERS			
SP-1	9"	12"		1"C 1"C 1"C 1"C 1"C	1.5" 1" 1" 1" 1.5"	N/A	2	YELLOW	BLACK	BLACK	2 MTD ON TS POLE	0.75		1.50
SP-2	18"	12"		4"D	4" 4"	N/A	2	GREEN	WHITE	WHITE	2 MTD W/OTHERS	1.50		3.00

NOTE: HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, FOR VERTICAL & LATERAL CLEARANCES.

TEMPORARY TRAFFIC CONTROL PLAN GENERAL NOTES

- ALL CONSTRUCTION SIGNING, TEMPORARY TRAFFIC CONTROL DEVICES, AND ROADSIDE ELEMENTS SHALL CONFORM WITH THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS AMENDED, THE MASSDOT STANDARD DETAILS AND DRAWINGS FOR THE DEVELOPMENT OF TEMPORARY TRAFFIC CONTROL PLANS, THE LATEST REVISIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, (AASHTO) ROADSIDE DESIGN GUIDE, AASHTO POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AND NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350 OR THE AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
- NO WORK SHALL OCCUR WITHIN THE PUBLIC WAY ON TOWN RECOGNIZED HOLIDAYS UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- WORK SHALL NOT AFFECT TRAFFIC PATTERNS DURING PEAK TRAFFIC PERIODS. PEAK TRAFFIC PERIODS ARE DEFINED AS MONDAY THRU FRIDAY 6:00AM-9:00AM AND 3:00PM-6:00PM.
- ALL DRUMS SHALL BE SET AT 20' ON CENTER MAX. ON LOCAL ROADWAY. UNLESS OTHERWISE NOTED OR ADJUSTED BY THE ENGINEER.
- ALL DRUMS SHALL BE APPROXIMATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH THE WORK AREAS, BOTH DURING AND AFTER WORKING HOURS, TO MAINTAIN SUCH ACCESS.
- THE CONTRACTOR SHALL NOTIFY EACH ABUTTOR AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS.
- FOR RESTORATIVE WORK ON LOCAL ROADWAYS, A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION ON TWO WAY STREETS SHALL BE MAINTAINED AT ALL TIMES, EXCEPT THAT DURING WORKING HOURS, TRAFFIC MAY BE REDUCED TO ONE LANE UNDER POLICE CONTROL FOR SHORT TIME PERIODS WHEN REQUIRED FOR THE WORK, AS SHOWN UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- FOR DROP-OFFS 4" OR LESS, CONDITION MAY BE MITIGATED WITH W8-9 (LOW SHOULDER) SIGN OR TEMPORARY CHANNELIZATION DEVICES. FOR DROP-OFFS GREATER THAN 4" BUT NO MORE THAN 12", DETERMINE WHETHER IT IS MORE COST EFFECTIVE TO INSTALL BOTH TEMPORARY CHANNELIZATION DEVICES AND A 1V:4H (MIN) TO 1V:6H (DESIRED) WEDGE OR TO SHIELD IT. FOR DROP-OFFS GREATER THAN 12" BUT NO MORE THAN 24", DETERMINE WHETHER IT IS MORE COST EFFECTIVE TO MAINTAIN AN ADDITIONAL 5' OF SHOULDER WIDTH AND INSTALL BOTH TEMPORARY CHANNELIZATION DEVICES AND A 1V:6H (DESIRE) WEDGE OR TO SHIELD IT. FOR DROP-OFFS 24" OR GREATER USE BARRIER IN ACCORDANCE WITH MASSDOT WORK ZONE POSITIVE PROTECTION GUIDELINES.
- 11' MINIMUM LANE WIDTHS SHALL BE MAINTAINED.
- NON-ESSENTIAL TRAFFIC CONTROL DEVICES AND SIGNS SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS WHEN NOT IN USE.
- ADVISORY SPEED PLATES (W13-1P) SHALL BE USED AS SHOWN AND AS REQUESTED BY THE ENGINEER. POSTED ADVISORY SPEED SHALL BE AS APPROVED BY THE APPROPRIATE AGENCY WITH JURISDICTION OVER THE ROADWAY ON WHICH THE SIGN WILL BE MOUNTED.
- SIGNS INSTALLED ON PORTABLE STANDS REQUIRE 12 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
- SIGNS INSTALLED ON PORTABLE STANDS PLACED AMONG CHANNELIZATION DEVICES REQUIRE A 36 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
- SIGNS MOUNTED ON P5 POSTS REQUIRE A MINIMUM 84 INCH MOUNTING HEIGHT FROM THE ROADWAY OR SIDEWALK SURFACE TO THE BOTTOM OF THE SIGN.
- W20-7b SIGNS SHALL BE REPLACED BY W20-7 SIGNS WHEN FLAGGERS ARE USED IN LIEU OF POLICE OFFICER DETAILS.
- REFLECTORIZED CONES SHALL BE A MINIMUM OF 36 INCHES IN HEIGHT.
- CONES MAY BE USED IN LIEU OF DRUMS OUTSIDE OF TAPER AREAS.
- THERE IS NO DESIGNATED BICYCLE LANE ON THE ROADWAY WITHIN THE PROJECT LIMITS. BICYCLES ARE EXPECTED TO SHARE THE ROAD WITH GENERAL VEHICULAR TRAFFIC.
- CONTRACTOR SHALL SECURE WORK AREAS TO PREVENT UNAUTHORIZED ACCESS AT ALL TIMES.
- W20-8a SIGNS SHALL BE INSTALLED IN ADVANCE (100' MIN) OF PROPS WHERE UTILITY CASTINGS HAVE BEEN RAISED IN ADVANCE OF PAVING OPERATIONS OR AS REQUESTED BY THE ENGINEER.
- W8-15 SIGNS SHALL BE INSTALLED IN ADVANCE (100' MIN) OF PAVEMENT MILLING PROPS OR AS REQUESTED BY THE ENGINEER.
- TEMPORARY MARKINGS SHALL BE WATERBORNE PAINT ON SURFACE-APPLIED REMOVABLE TAPE AS APPROVED BY THE ENGINEER.
- ALL TEMPORARY CROSSWALKS AND STOP LINES SHALL BE 12 INCHES WIDE.
- ALL TEMPORARY DOUBLE YELLOW LINES (DBYL) SHALL BE 6 INCHES WIDE.
- THE FIRST 5 DRUMS ON TAPERS SHALL BE REFLECTORIZED DRUMS WITH TYPE A LIGHTS.
- W20-8a SIGNS SHALL BE INSTALLED IN ADVANCE (100' MIN) OF AREAS WHERE UTILITY CASTINGS HAVE BEEN RAISED IN ADVANCE OF PAVING OPERATIONS OR AS REQUESTED BY THE ENGINEER.
- W20-1c OR R2-10a SIGNS SHOWN ON ADVANCE SIGN SCHEMATIC MAY BE USED IN LIEU OF THOSE SIGNS SHOWN ON TYPICAL DETAILS ON THE TEMPORARY TRAFFIC CONTROL PLANS IF MINIMUM SIGN SPACING IS MET.
- WHEN UTILIZING TYPICAL TRAFFIC CONTROL DETAILS OR STAGING SETUPS, COVER EXISTING CONFLICTING ADVANCE WARNING SIGNS AS REQUIRED TO COMPLETE THE WORK.
- CONTRACTOR SHALL NOT INSTALL CROSSWALK MARKINGS ON NORTH MAIN STREET OR WHITE'S PATH UNTIL SUCH TIME AS PHASE 2 CAPE COD RAIL TRAIL CONNECTION IS OPEN FOR USE. CONTRACTOR SHALL RETAIN TYPE 3 BARRICADES AND R9 SERIES SIGNS UNTIL FINAL CROSSWALK MARKINGS ARE INSTALLED.

LEGEND	
	FLAGGER
	POLICE OFFICER
	REFLECTORIZED DRUM
	REFLECTORIZED DRUM WITH TYPE A FLASHER
	TEMPORARY CONSTRUCTION SIGN
	TRAFFIC CONE
	TYPE III BARRICADE
	PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)
	WORK AREA (PUBLIC ACCESS RESTRICTED)
	TRAFFIC FLOW
	PEDESTRIAN ROUTE
	CONSTRUCTION FENCE
	PEDESTRIAN CHANNELIZATION DEVICE
NTS	NOT TO SCALE

ADVANCE SIGN SPACING				
ROAD	DISTANCE BETWEEN SIGNS (FEET)			
	A	B	C	D
N MAIN STREET & WHITES PATH	350	200	350	350

LANE TAPER LENGTH FORMULA

L= TAPER LENGTH IN FEET

W= WIDTH OF ROADWAY TO BE SHIFTED OR REDIRECTED IN FEET

S= POSTED SPEED LIMIT IN MPH

POSTED SPEED 40 MPH OR LESS

$$L = \frac{WS^2}{60}$$

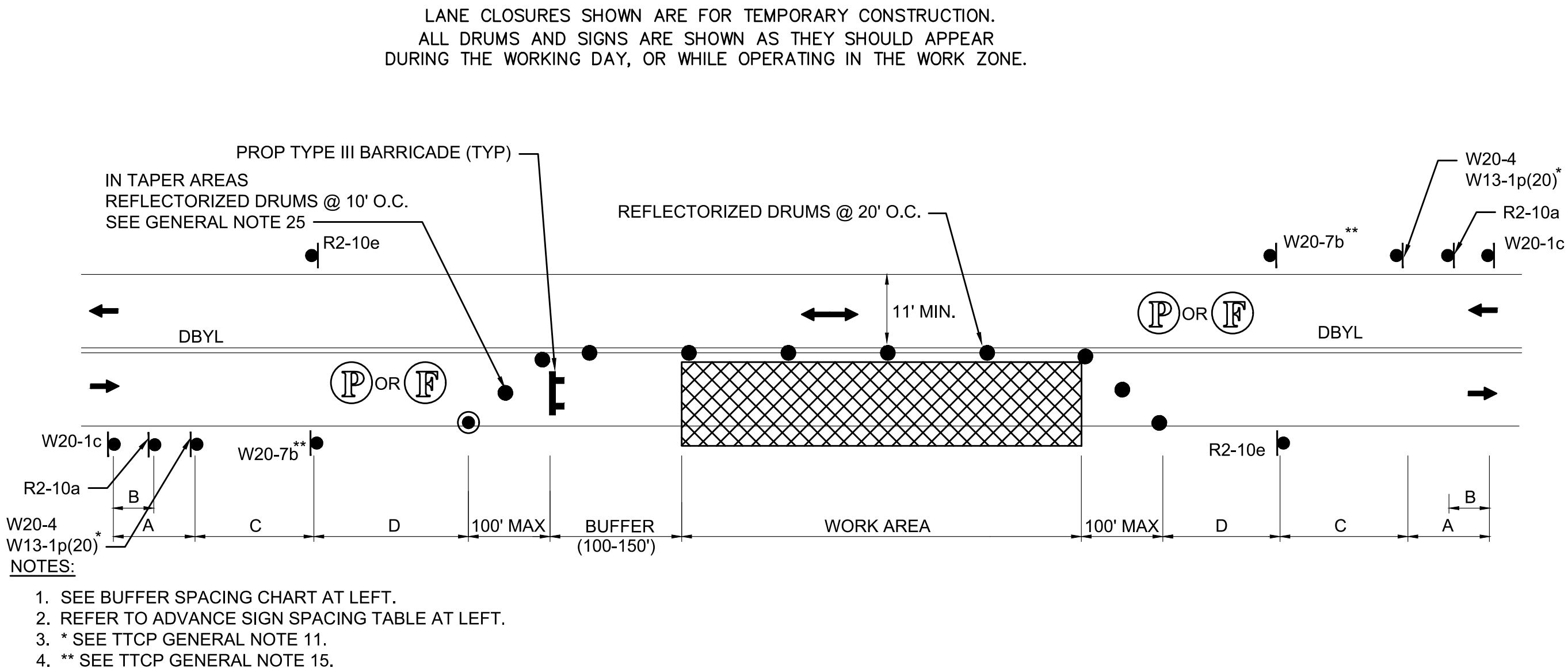
BUFFER SPACING

SPEED (MPH)	DISTANCE (FEET)
20	115
25	155
30	200
35	250

YARMOUTH & DENNIS
CAPE COD RAIL TRAIL EXTENSION - PHASE II

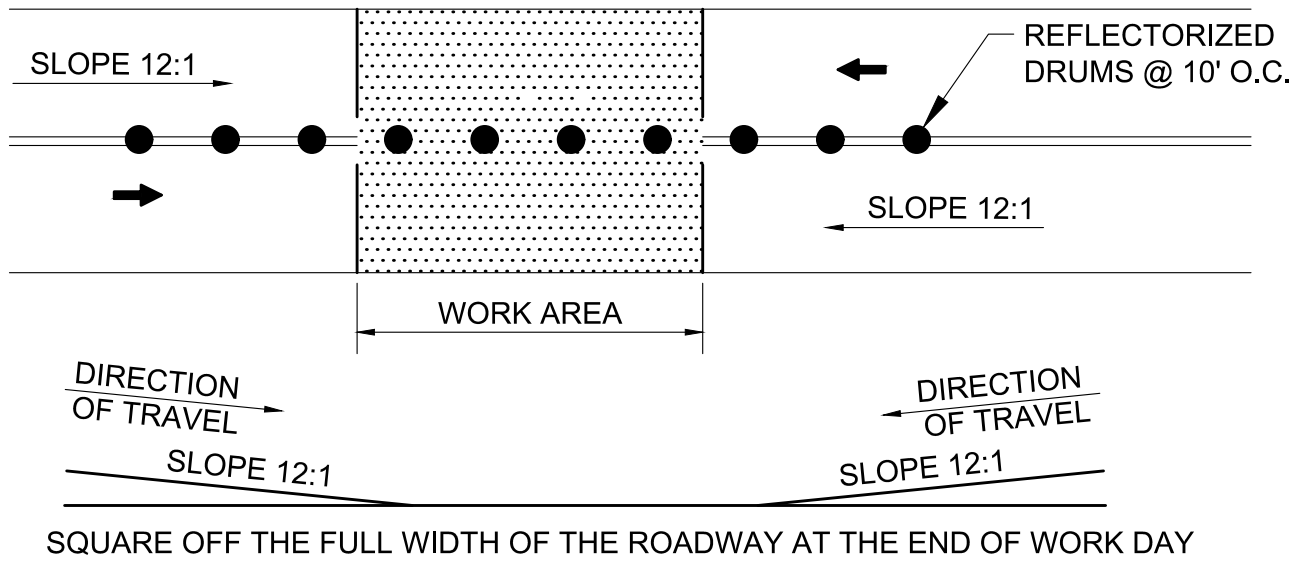
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	17	68
PROJECT FILE NO. 607571			

TEMPORARY TRAFFIC CONTROL PLANS
GENERAL NOTES & LEGEND



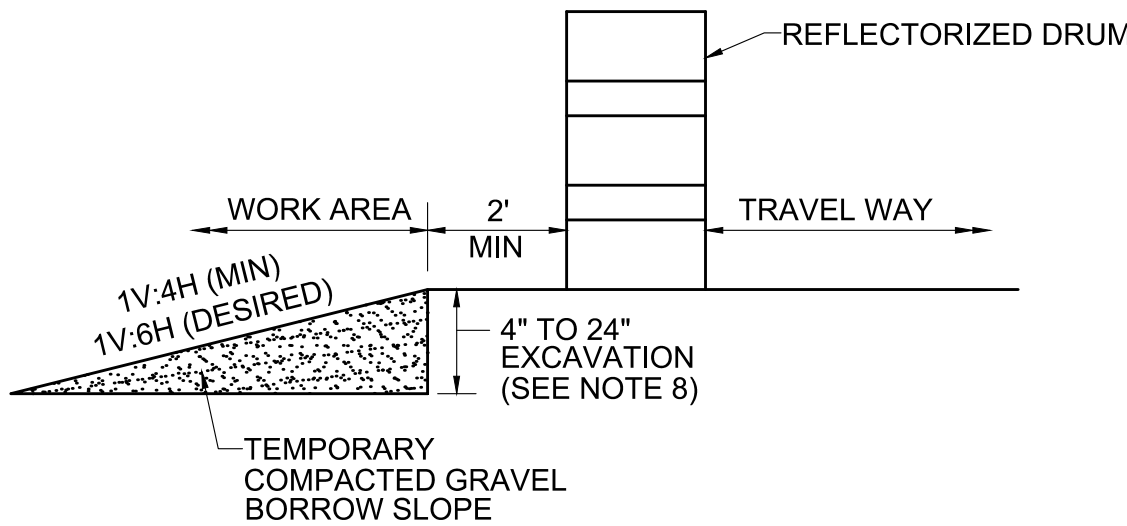
TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC

SCALE: NTS



TEMPORARY PAVEMENT TRANSITION DETAIL

SCALE: NTS

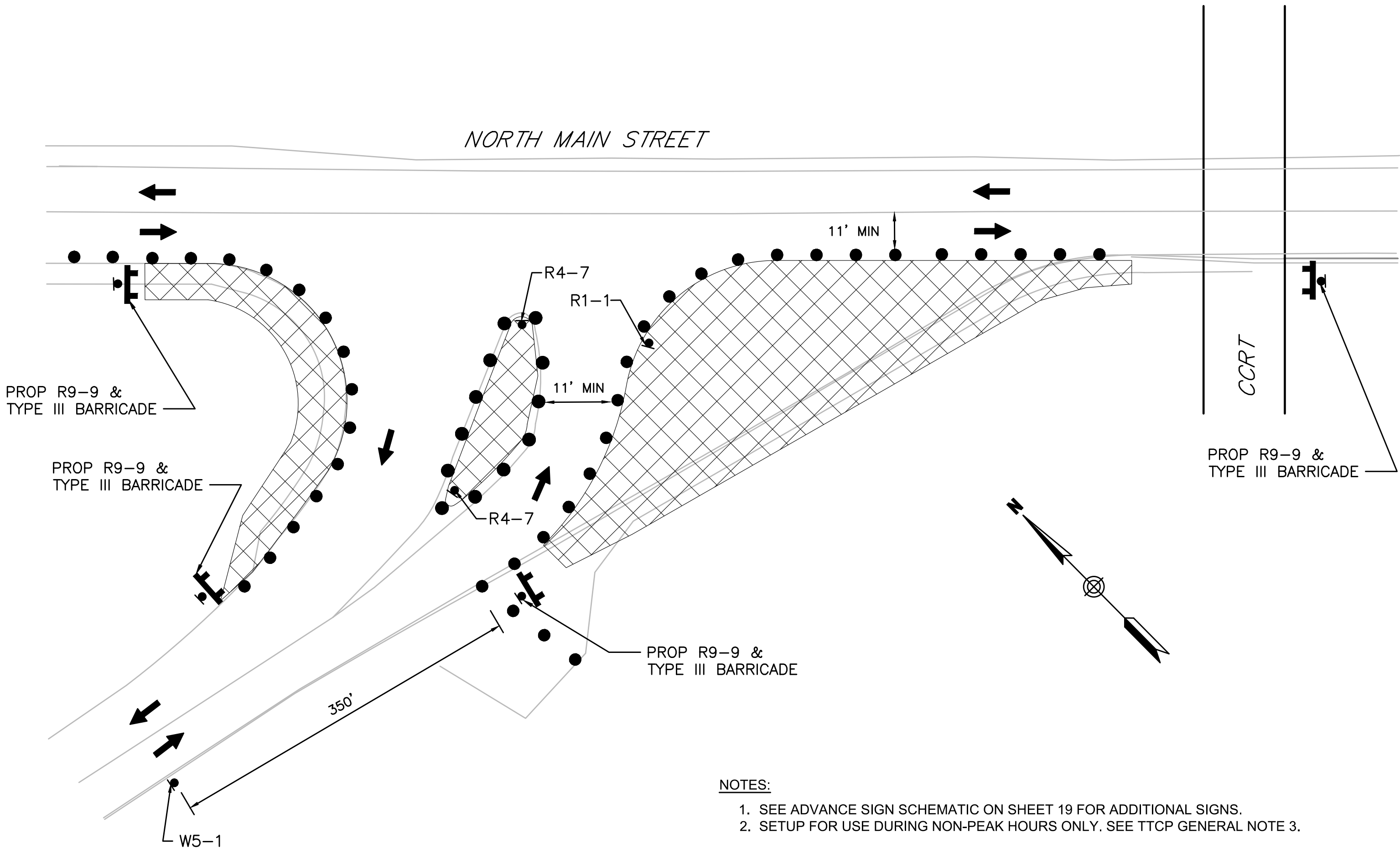


NOTE:
CONTRACTOR SHALL INSTALL W8-9 SIGN ON ALL ROADWAYS 350 FT IN ADVANCE OF THE START OF DROP-OFF CONDITION.

TYPICAL ROADWAY DROP-OFF PROTECTION

SCALE: NTS

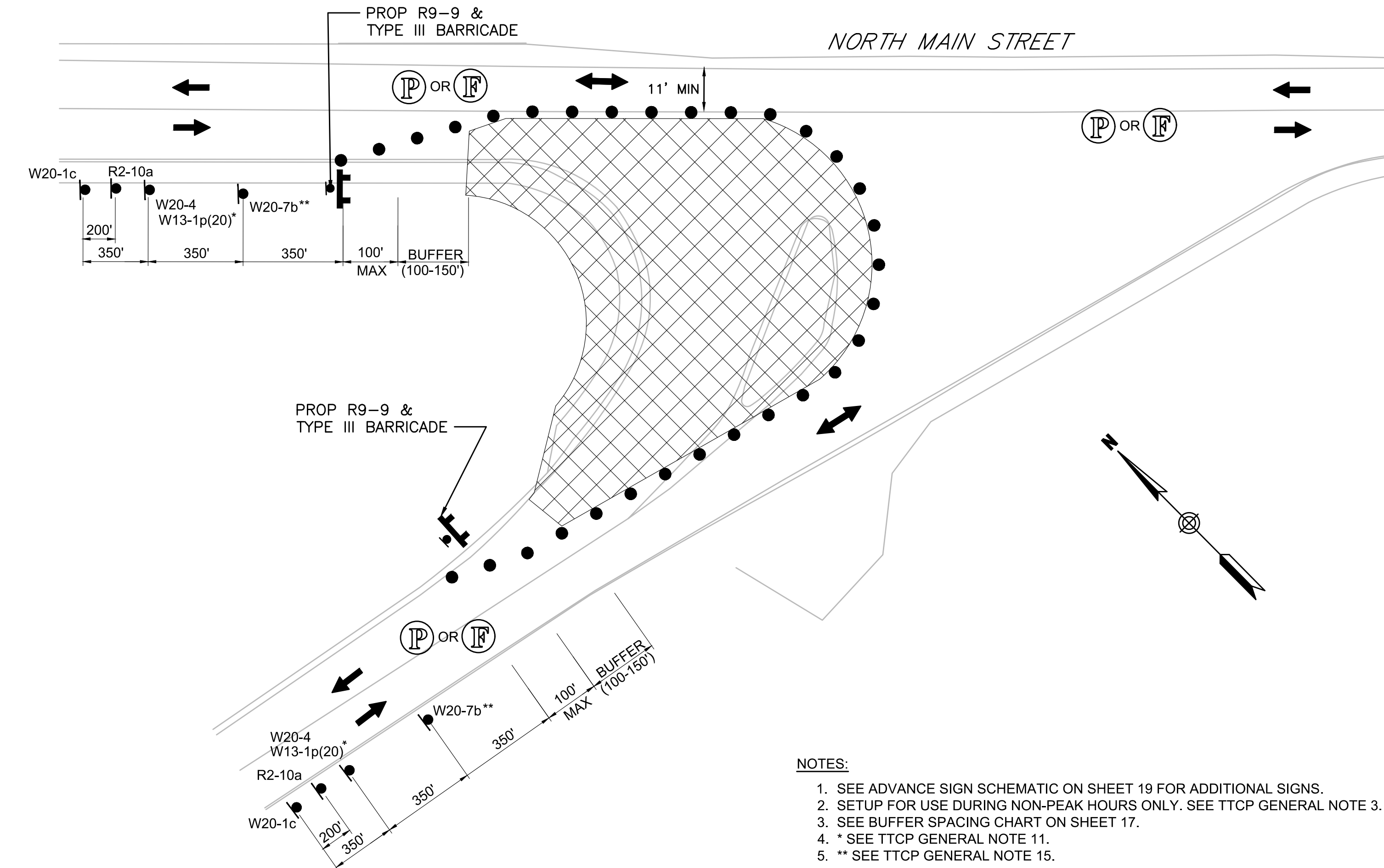
TEMPORARY TRAFFIC CONTROL PLANS



- NOTES:
1. SEE ADVANCE SIGN SCHEMATIC ON SHEET 19 FOR ADDITIONAL SIGNS.
 2. SETUP FOR USE DURING NON-PEAK HOURS ONLY. SEE TTCP GENERAL NOTE 3.

WHITE'S PATH LANE MODIFICATIONS - NON WORKING HOURS SET UP

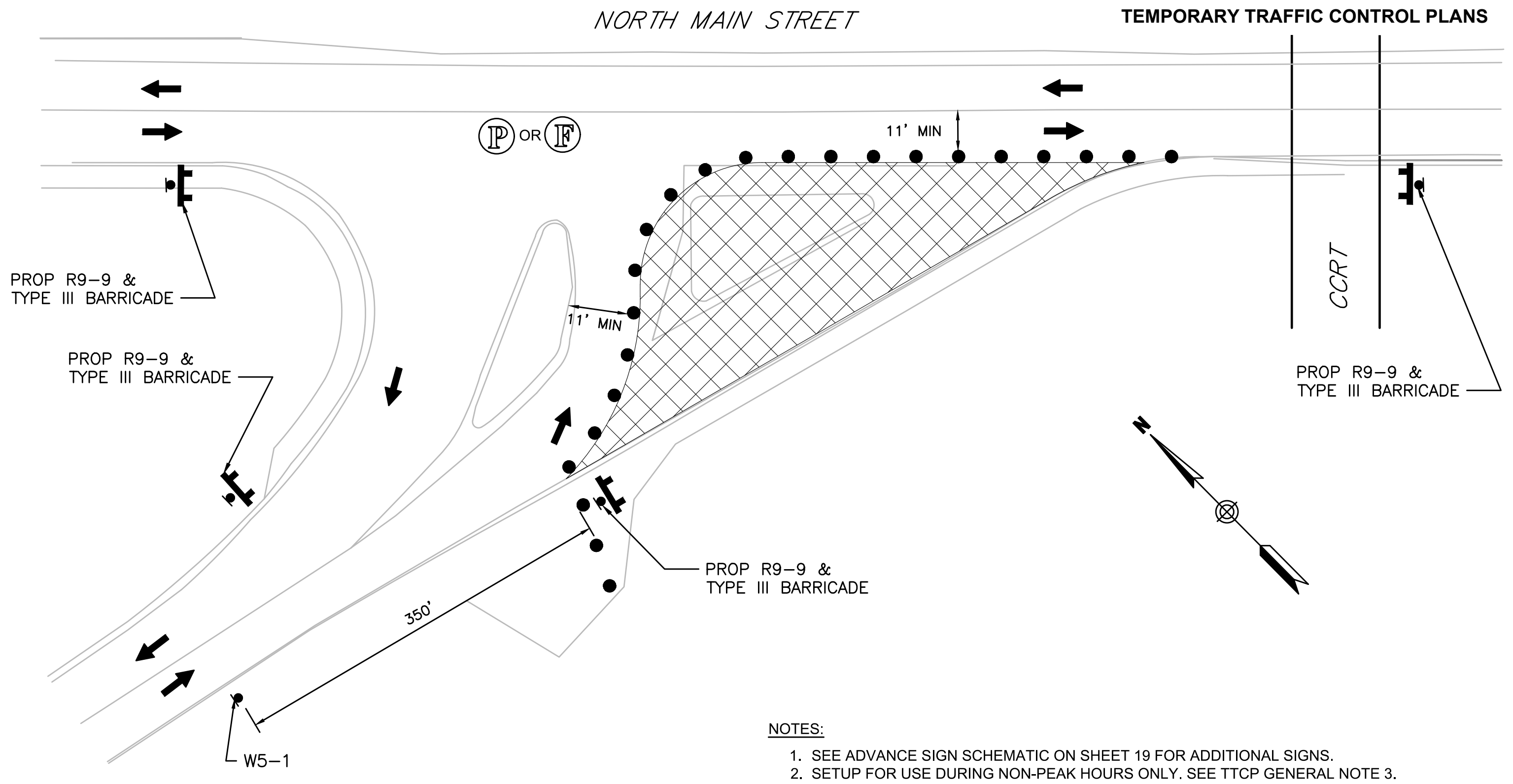
SCALE: NTS



- NOTES:
1. SEE ADVANCE SIGN SCHEMATIC ON SHEET 19 FOR ADDITIONAL SIGNS.
 2. SETUP FOR USE DURING NON-PEAK HOURS ONLY. SEE TTCP GENERAL NOTE 3.
 3. SEE BUFFER SPACING CHART ON SHEET 17.
 4. * SEE TTCP GENERAL NOTE 11.
 5. ** SEE TTCP GENERAL NOTE 15.

WHITE'S PATH LANE MODIFICATIONS - STAGE 2 - RECONSTRUCT MEDIAN ISLAND & NORTHWEST CORNER

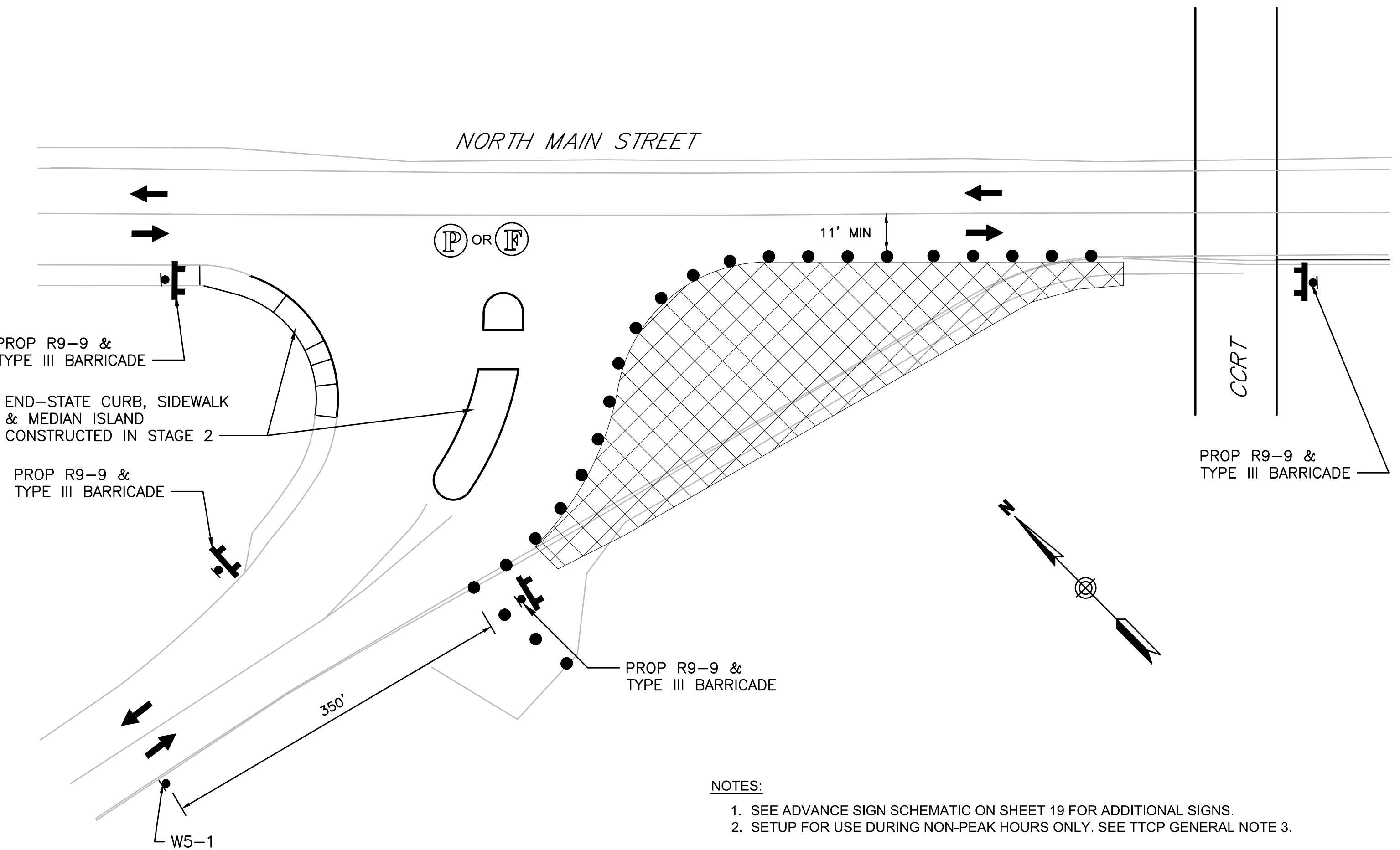
SCALE: NTS



- NOTES:
1. SEE ADVANCE SIGN SCHEMATIC ON SHEET 19 FOR ADDITIONAL SIGNS.
 2. SETUP FOR USE DURING NON-PEAK HOURS ONLY. SEE TTCP GENERAL NOTE 3.

WHITE'S PATH LANE MODIFICATIONS - STAGE 1 - REMOVE SPLITTER ISLAND

SCALE: NTS

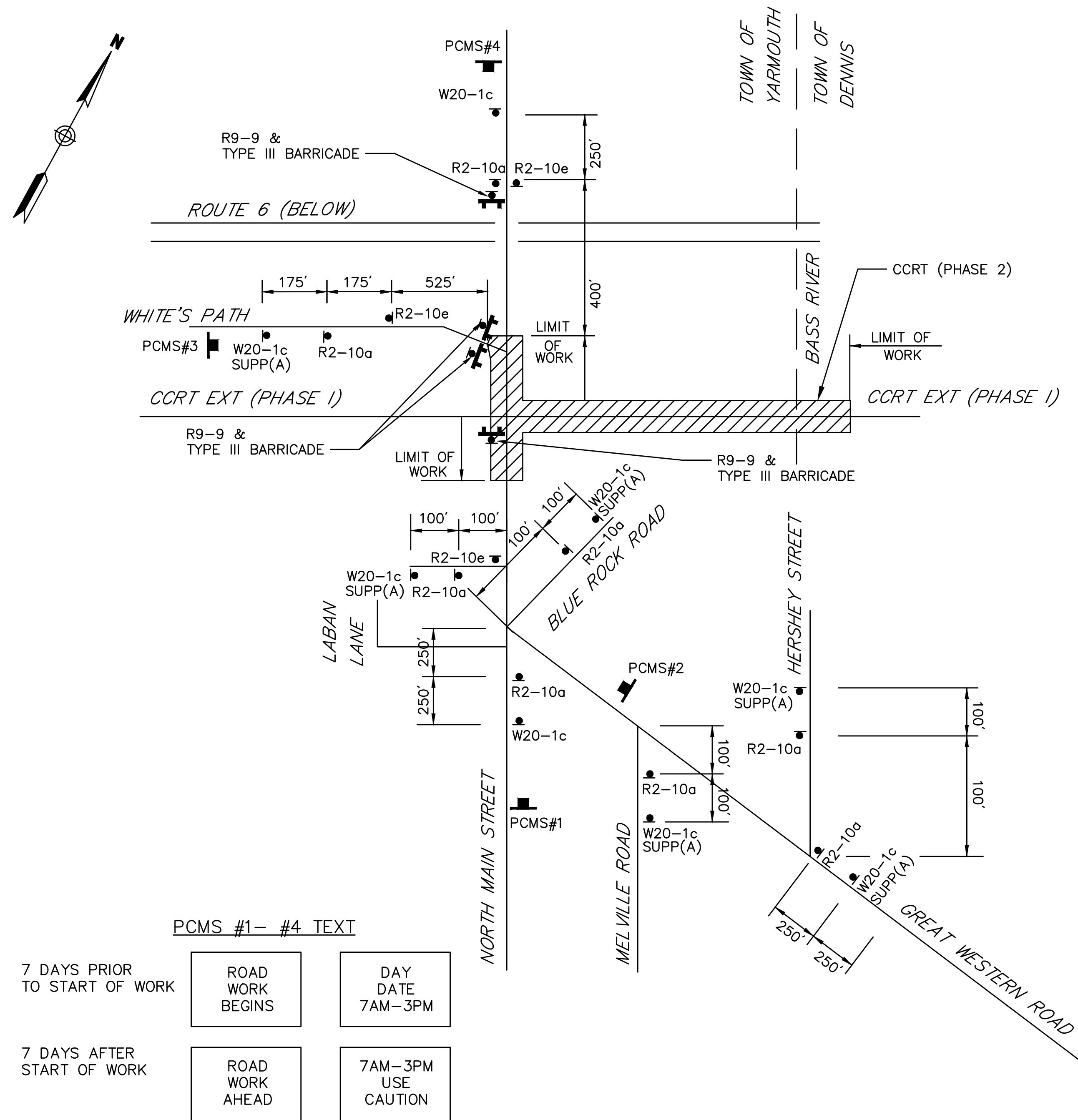


- NOTES:
1. SEE ADVANCE SIGN SCHEMATIC ON SHEET 19 FOR ADDITIONAL SIGNS.
 2. SETUP FOR USE DURING NON-PEAK HOURS ONLY. SEE TTCP GENERAL NOTE 3.

WHITE'S PATH LANE MODIFICATIONS - STAGE 3 - RECONSTRUCT SOUTHWEST CORNER

SCALE: NTS



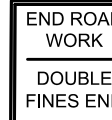
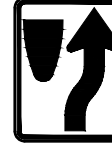







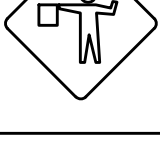


NTS
SIGNS TO BE INSTALLED AT THE PROJECT
LIMITS AS SHOWN.
ALL ADVANCE SIGNS TO BE IN PLACE FOR
THE DURATION OF THE PROJECT.



1. ADVANCE SIGNS TO BE INSTALLED AT THE PROJECT LIMITS AS SHOWN.
2. ALL ADVANCE SIGNS TO BE IN PLACE FOR THE DURATION OF THE PROJECT.
3. PCMS SHALL BE INSTALLED WITHIN THE EXISTING RIGHT-OF-WAY (ROW) OFF THE ROADWAY AT APPROXIMATE LOCATIONS SHOWN OR AS DIRECTED BY MASSDOT. PCMS SHALL NOT BE PLACED ON EXISTING SIDEWALK.
4. DAY AND DATE ON PCMS MESSAGING SHALL BE COORDINATED WITH MASSDOT.
5. CONTRACTOR SHALL PROVIDE PCMS A MINIMUM OF 7 DAYS PRIOR TO START OF CONSTRUCTION.
6. CONTRACTOR SHALL REMOVE ALL PCMS SHOWN 7 DAYS AFTER THE START OF CONSTRUCTION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	19	68
PROJECT FILE NO. 607571			

TEMPORARY TRAFFIC CONTROL SIGN SUMMARY

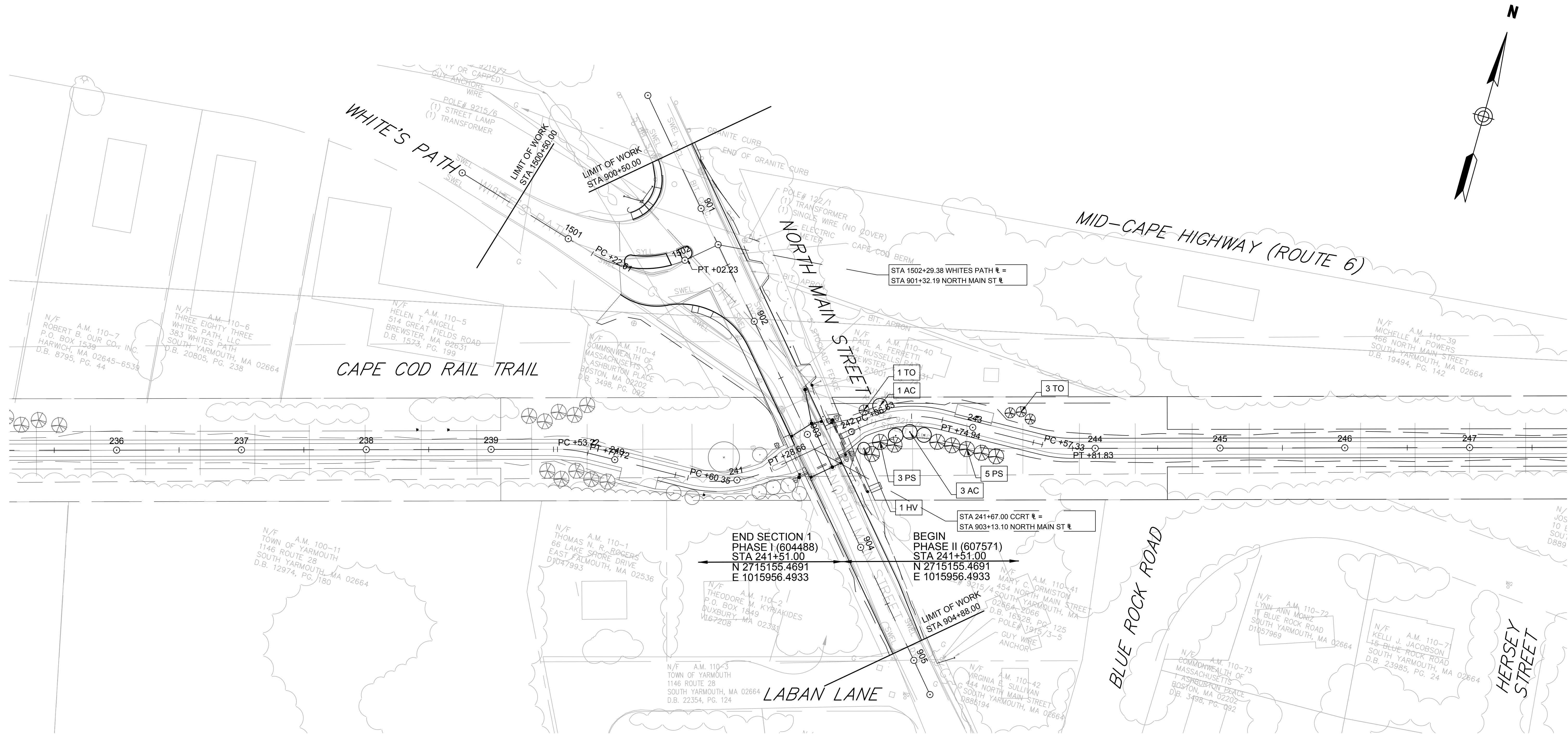
IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	BACK- GROUND	COLOR	BORDER	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	HEIGHT	WIDTH					LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.			
R1-1	30"	30"		RED	WHITE	WHITE	SEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			1	5.18	5.18
R2-10a	48"	36"		FLOURESCENT ORANGE WHITE	BLACK	BLACK	SEE MASSDOT STANDARDS			11	12.00	132.00
R2-10e	36"	48"		FLOURESCENT ORANGE WHITE	BLACK	BLACK	SEE MASSDOT STANDARDS			6	12.00	72.00
R4-7	30"	24"		WHITE	BLACK	BLACK	SEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			2	5.00	10.00
R9-9	18"	30"		WHITE	BLACK	BLACK				5	3.75	18.75
W5-1	36"	36"		FLOURESCENT ORANGE	BLACK	BLACK				1	9.00	9.00
W8-15	36"	36"		FLOURESCENT ORANGE	BLACK	BLACK				3	9.00	27.00
W13-1(20)	24"	24"		FLOURESCENT ORANGE	BLACK	BLACK				3	4.00	12.00
W20-8a	36"	36"		FLOURESCENT ORANGE	BLACK	BLACK				3	9.00	27.00
W20-1c	36"	36"		FLOURESCENT ORANGE	BLACK	BLACK				11	9.00	99.00
W20-4	36"	36"		FLOURESCENT ORANGE	BLACK	BLACK				3	9.00	27.00
W20-7	36"	36"		FLOURESCENT ORANGE	BLACK	BLACK	SEE MASSDOT STANDARDS			3	9.00	27.00
W20-7b	36"	36"		FLOURESCENT ORANGE	BLACK	BLACK	SEE MASSDOT STANDARDS			3	9.00	27.00
SUPP(A)	12"	36"		FLOURESCENT ORANGE	BLACK	BLACK	SEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			6	3.00	18.00

NOTE: HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS.

LANDSCAPE PLANT LIST						
LABEL	SYMBOL	BOTANICAL NAME	COMMON NAME	UNIT	QUANTITY	REMARKS
AC		AMELANCHIER CANADENSIS	SHAD TREE	EA	4	4-5' ORNAMENTAL TREE
HV		HAMAMELIS VIRGINIANA	WITCH HAZEL SPRING BLOOMING	EA	1	2-3' HT SHRUB
PS		PINUS STROBUS	PINE WHITE	EA	8	5-6' H EVERGREEN TREE
TO		THUJA OCCIDENTALIS (NIGRA)	ARBORVITAE - DARK AMERICAN	EA	4	5-6' EVERGREEN TREE

YARMOUTH & DENNIS CAPE COD RAIL TRAIL EXTENSION - PHASE II			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	20	68
PROJECT FILE NO. 607571			
LANDSCAPE PLANS & DETAILS			

NOTE:
1. ALL AREAS WITHIN LIMIT OF WORK NOT COVERED WITH STRUCTURES, PADS, PAVEMENT, WASHED STONE OR RIPRAP SHALL RECEIVE A 2-IN LAYER OF COMPOST TOPSOIL AND SEED OVER A 4-IN LAYER OF LOAM.
2. LANDSCAPE QUANTITIES ARE PER SHEET.



OVERALL LANDSCAPE PLAN
PLAN

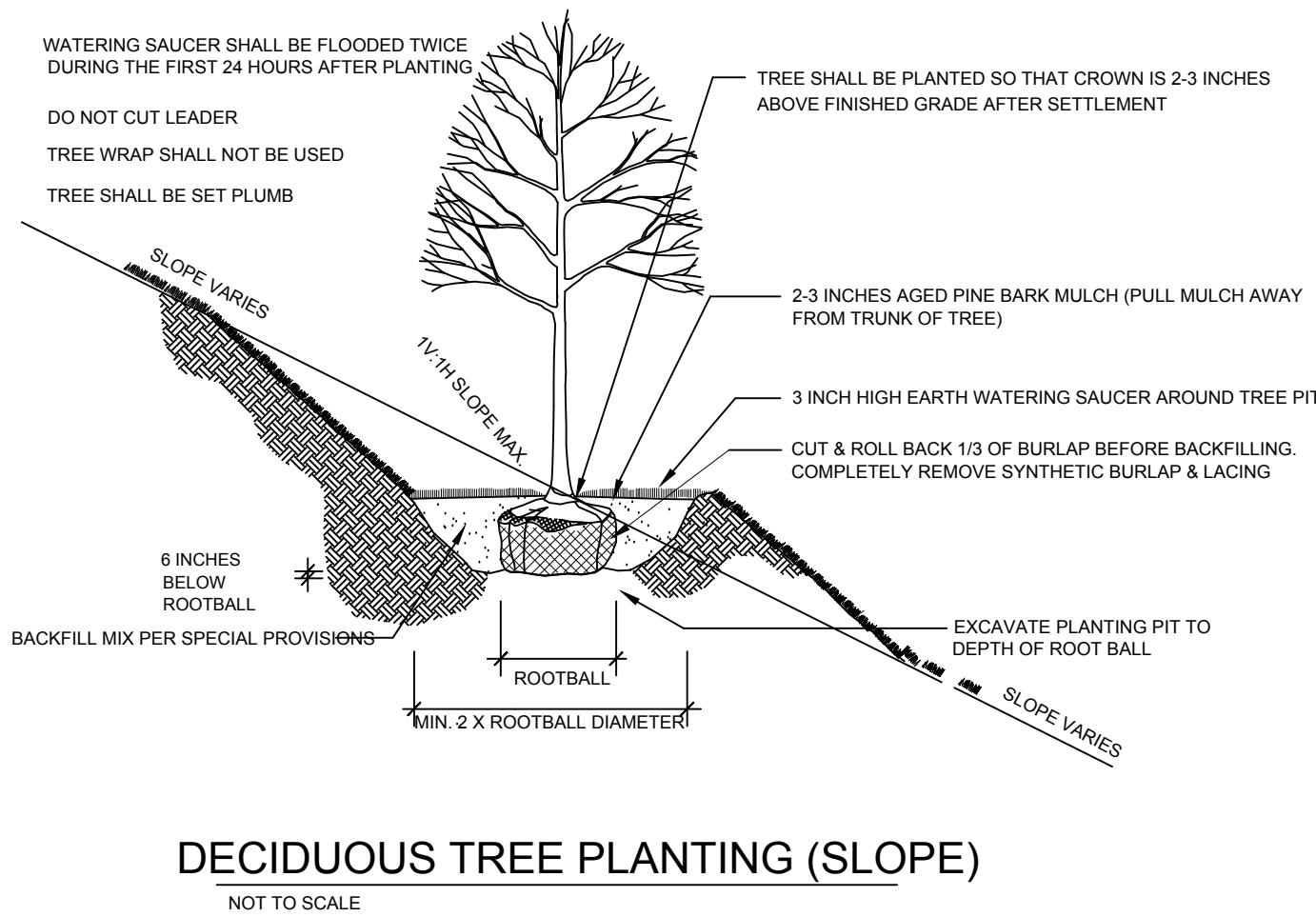
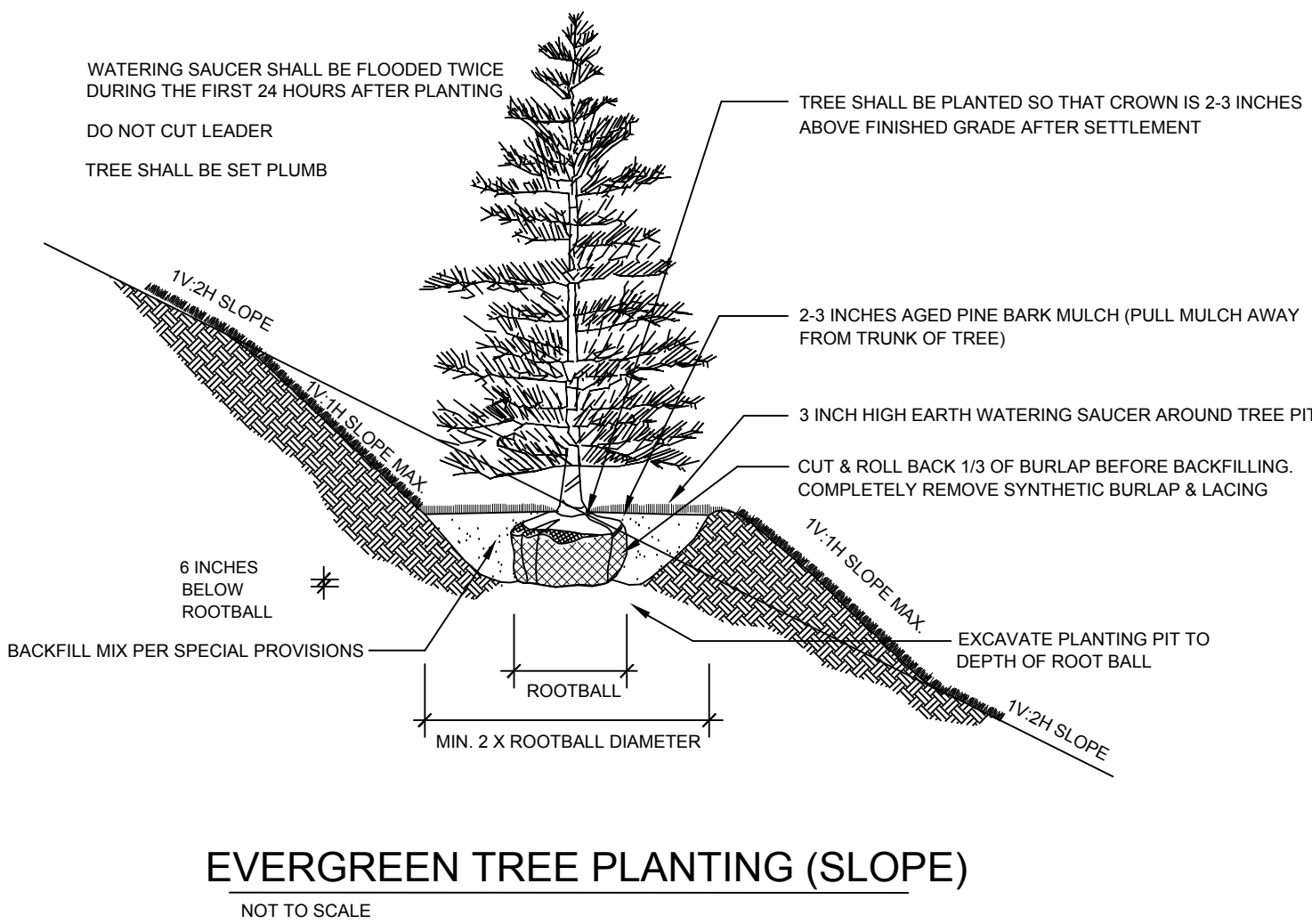
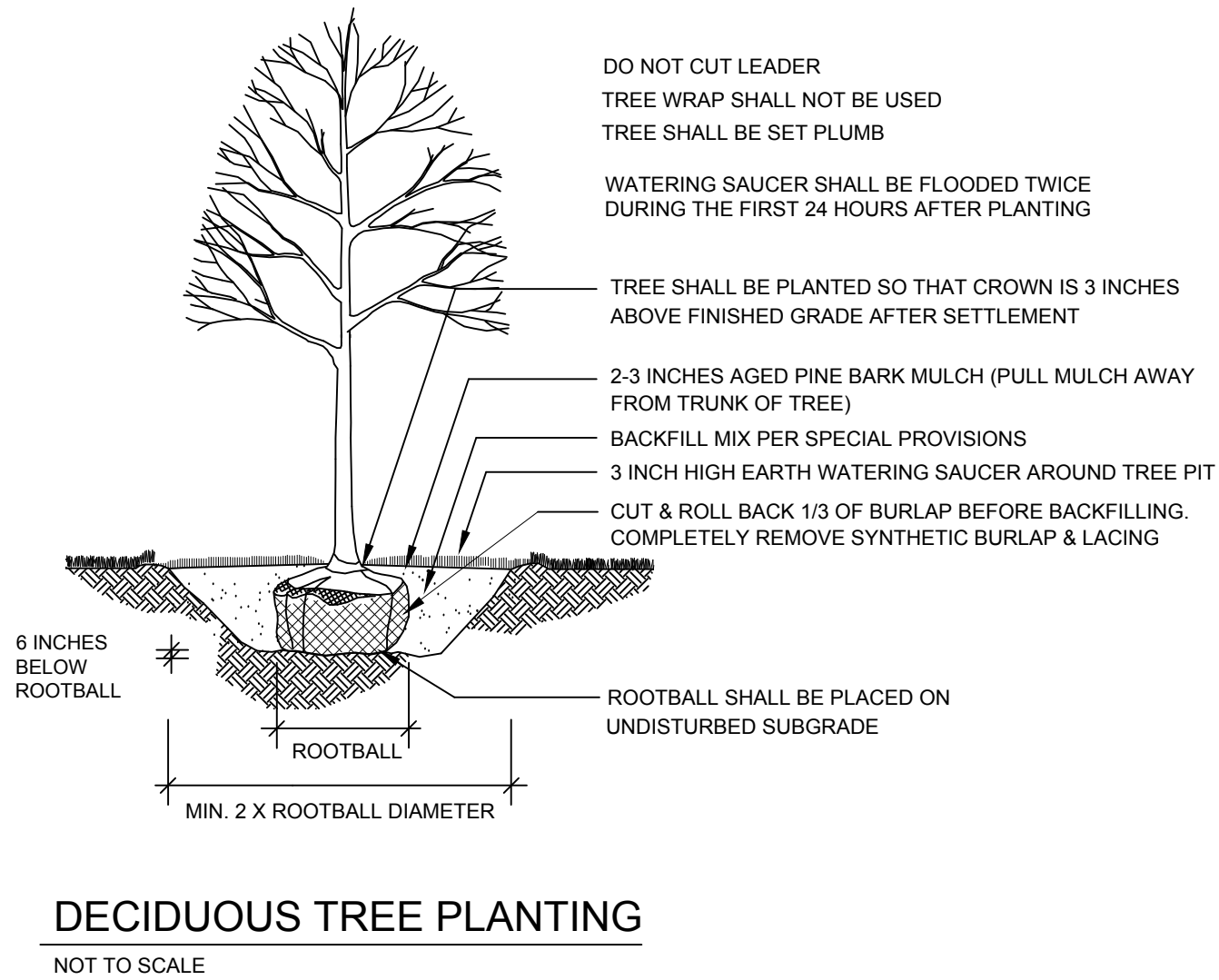
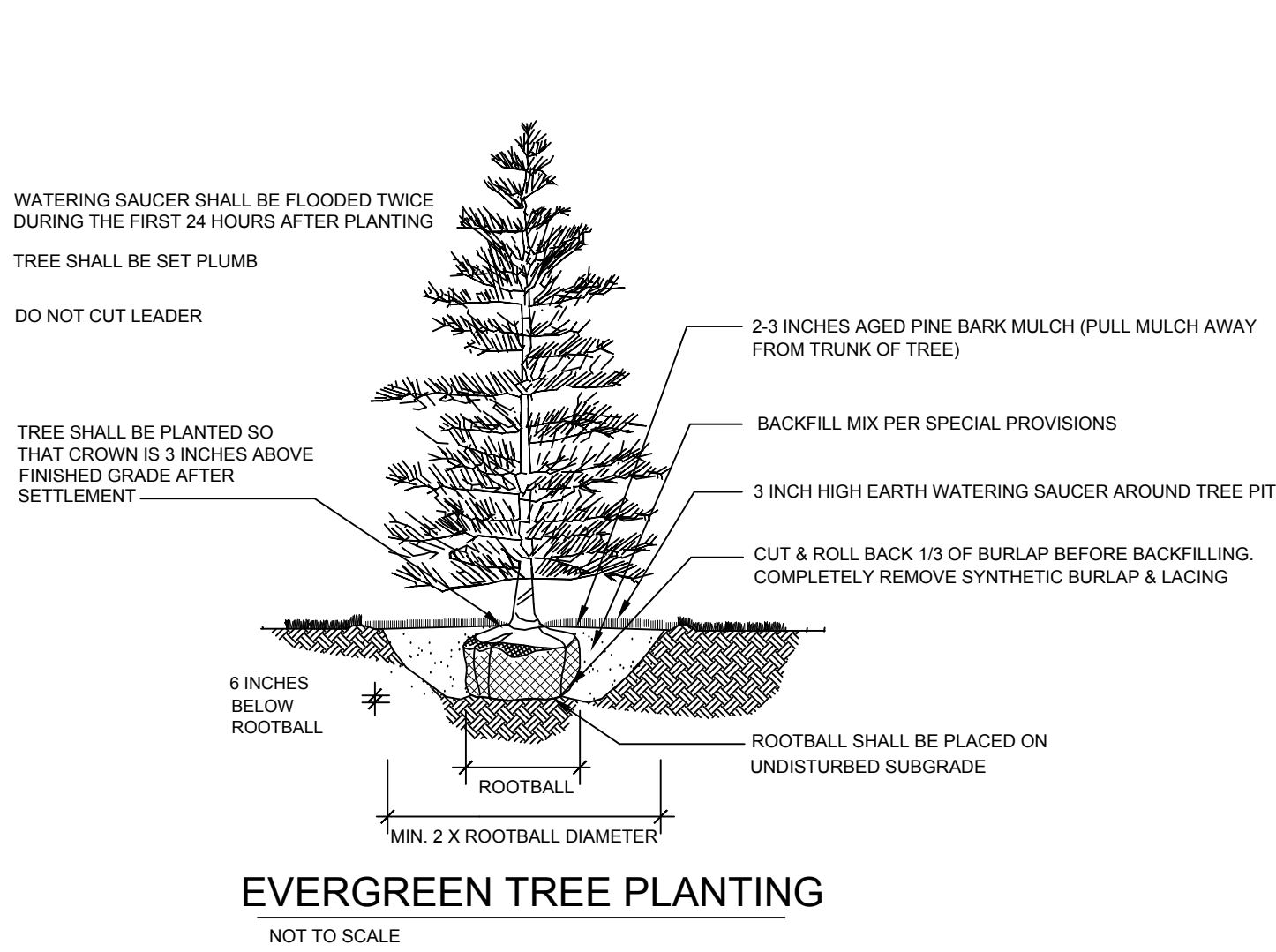


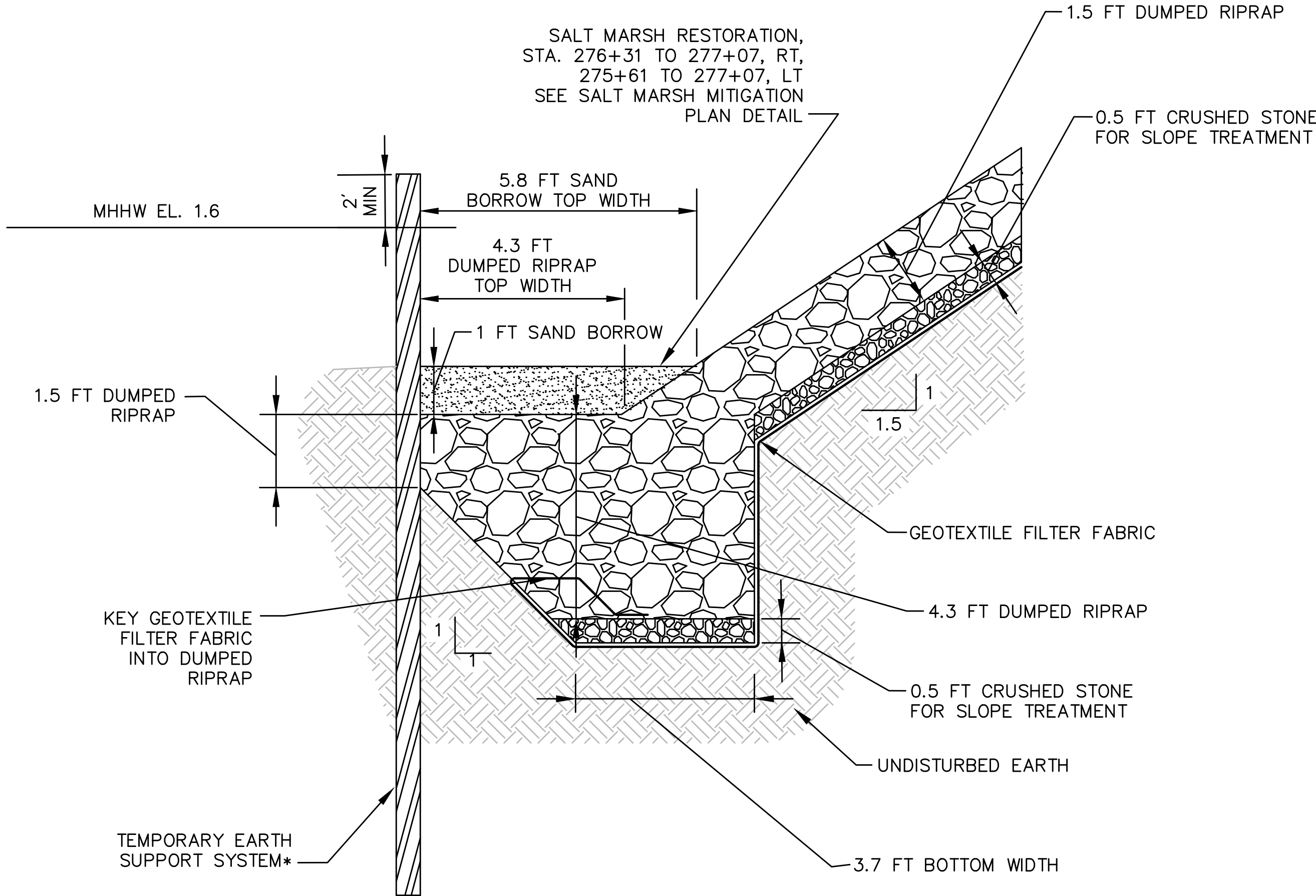
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	21	68
PROJECT FILE NO. 607571			

LANDSCAPE PLANS & DETAILS

	ORNAMENTAL TREES
	EVERGREEN TREES
	SHRUBS

MASTER PLANT SUMMARY LIST					
QTY.	KEY	BOTANICAL NAME	COMMON NAME	UNIT.	SIZE
EVERGREEN TREES					
13	PS	PINUS STROBUS	PINE WHITE	EA	5-6' H
4	TO	THUJA OCCIDENTALIS (NIGRA)	ARBORVITAE -DARK AMERICAN	EA	5'-6'
SHADE TREES					
4	AC	AMELANCHIER CANADENSIS	SHAD TREE	EA	4-5'
6	HV	HAMAMELIS VIRGINIANA	WITCH HAZEL SPRING BLOOMING	EA	2-3' HTL

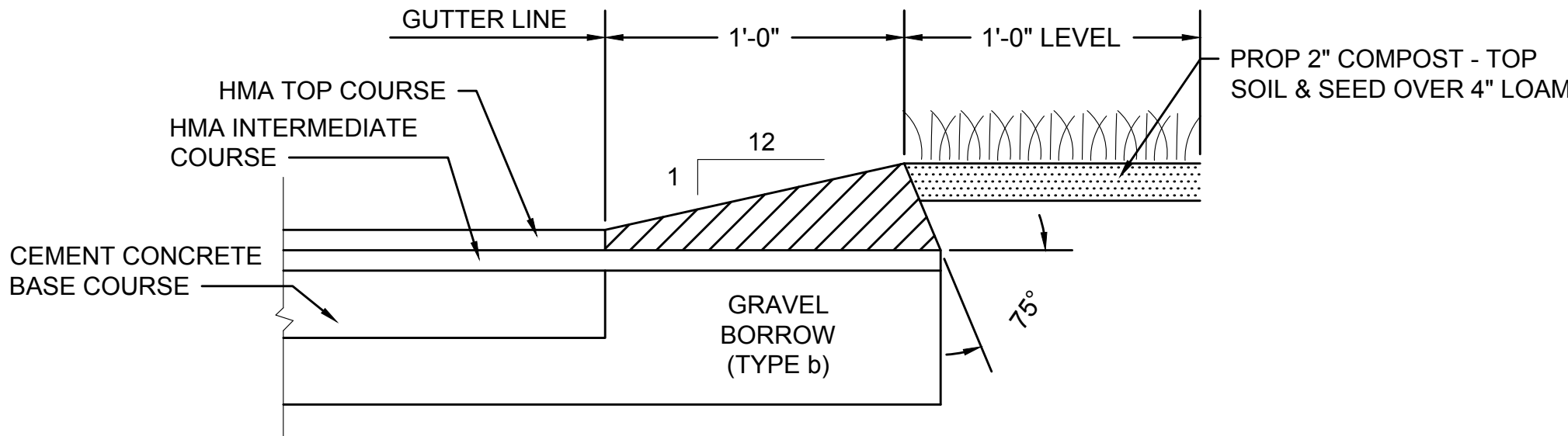




* STA 275+67± TO STA 277+07±, LT
STA 275+94± TO STA 277+07±, RT

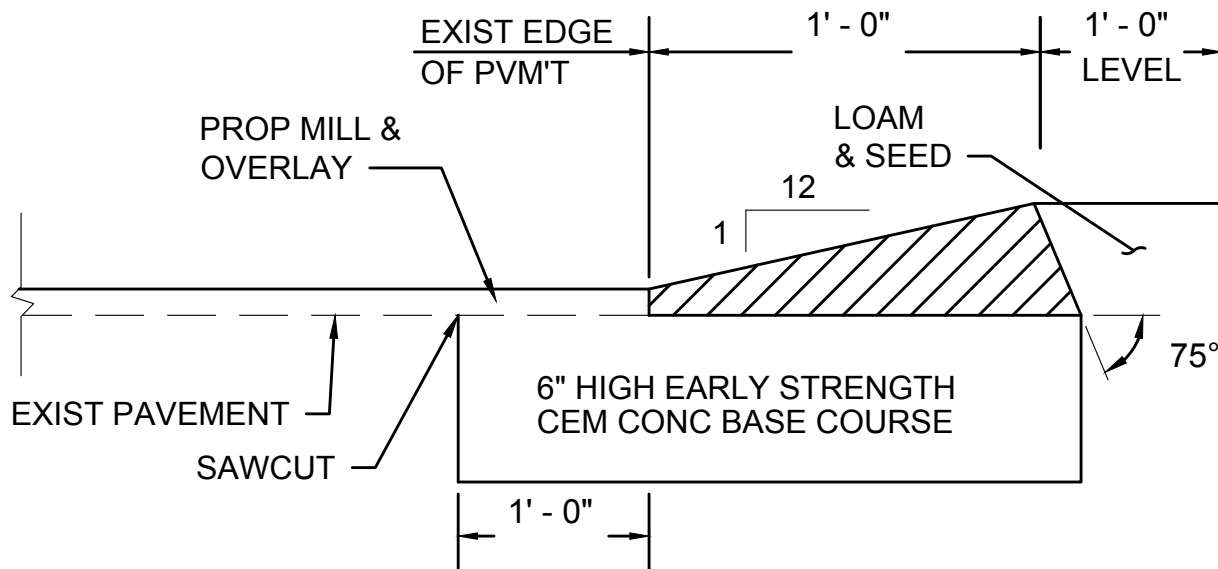
BASS RIVER – REVETMENT TOE
TYPE 1

SCALE: NOT TO SCALE
DATE:
DWG:



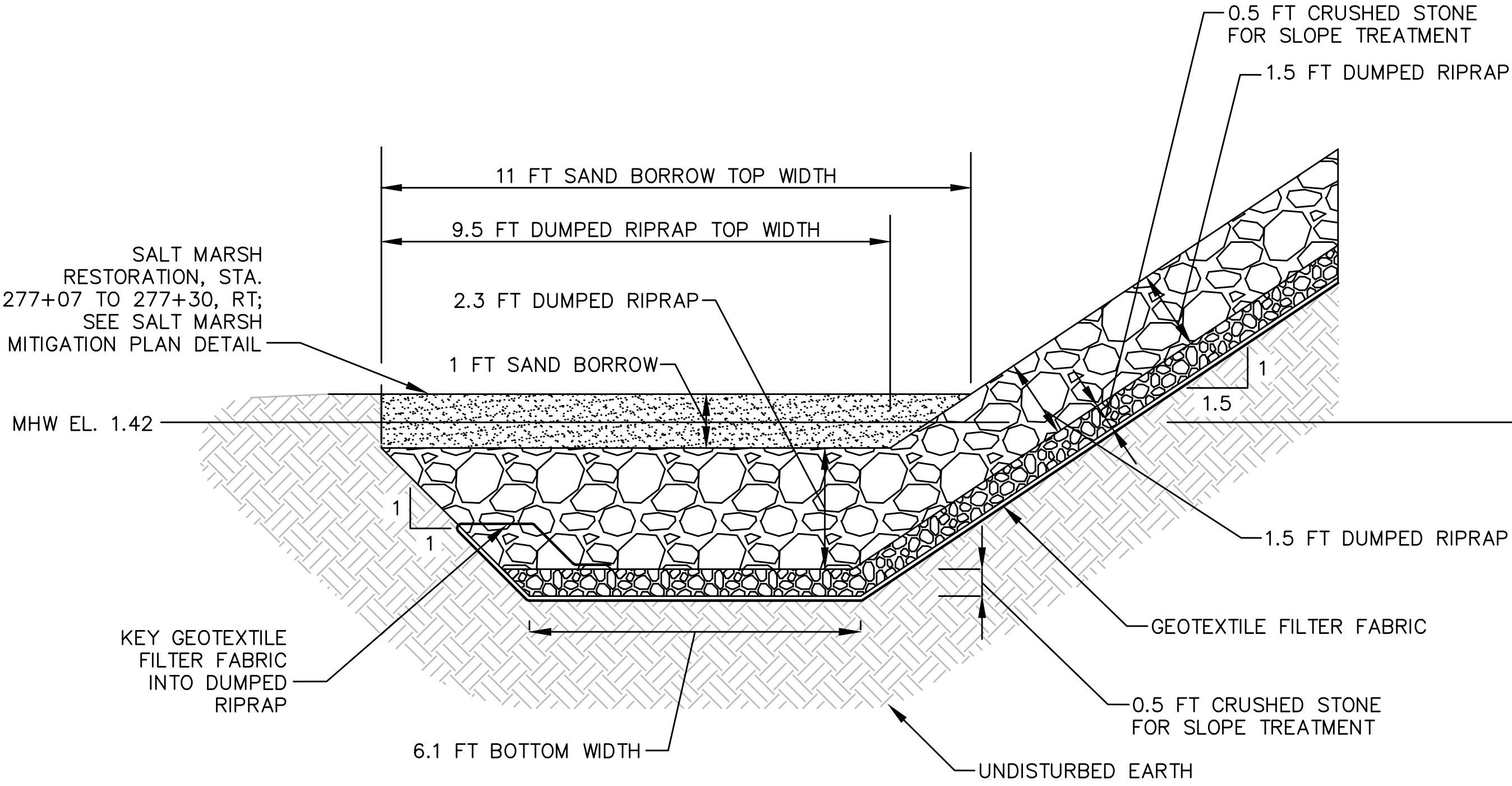
HMA BERM TYPE A-MODIFIED (USED WITH FULL
DEPTH PAVEMENT LESS THAN 4.0 FEET WIDE)

SCALE: N.T.S.



HOT MIX ASPHALT BERM TYPE A - MODIFIED
AT PAVEMENT MILL & OVERLAY

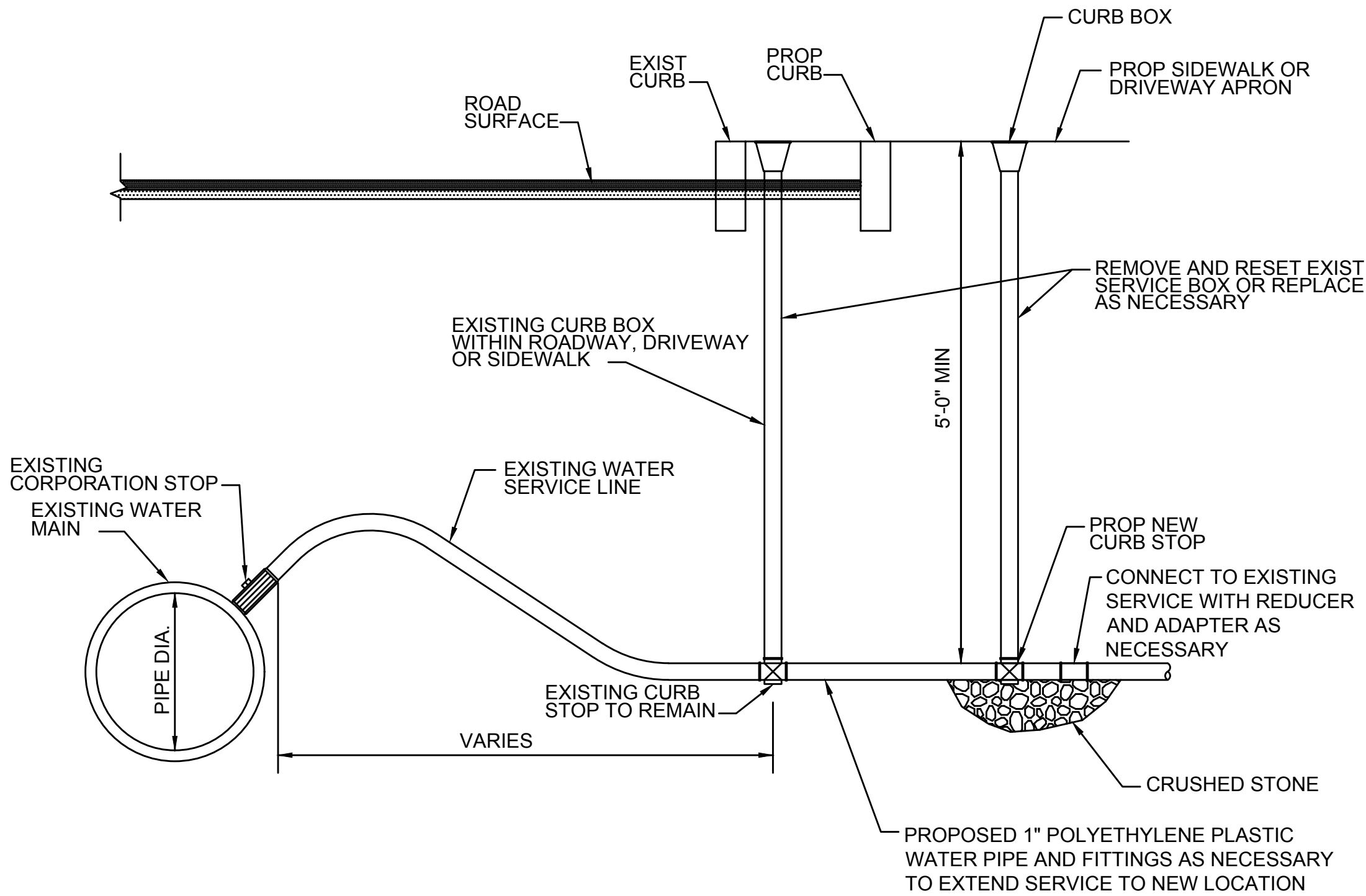
SCALE: N.T.S.



UNCLASSIFIED EXCAVATION –
ITEM 120.1
MHW EL. 1.42
DREDGING AND DISPOSING
OF MATERIAL – ITEM 148.

BASS RIVER – REVETMENT TOE
TYPE 2

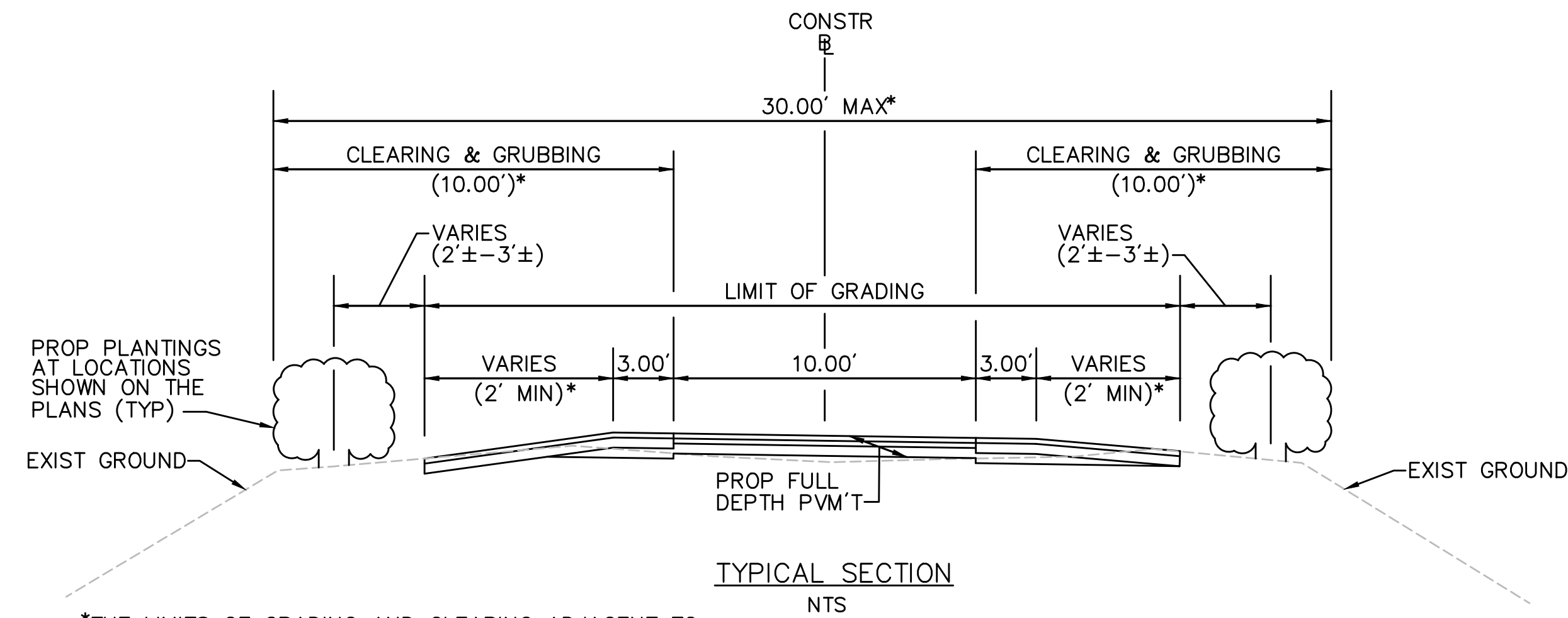
SCALE: NOT TO SCALE
DATE:
DWG:



- NOTE:
1. INSTALLATIONS SHALL CONFORM WITH MUNICIPAL WATER WORKS SPECIFICATIONS AND STANDARDS.
 2. IF EXISTING WATER SERVICE LINE IS NOT PLASTIC, CONTRACTOR SHALL NOTIFY THE YARMOUTH WATER DEPARTMENT. NO CONNECTION SHALL BE MADE UNTIL THE YARMOUTH WATER DEPARTMENT DETERMINES IF THE EXISTING LINE IS SUITABLE TO BE EXTENDED OR MUST BE REPLACED TO THE MAIN.

CURB STOP RELOCATION DETAIL

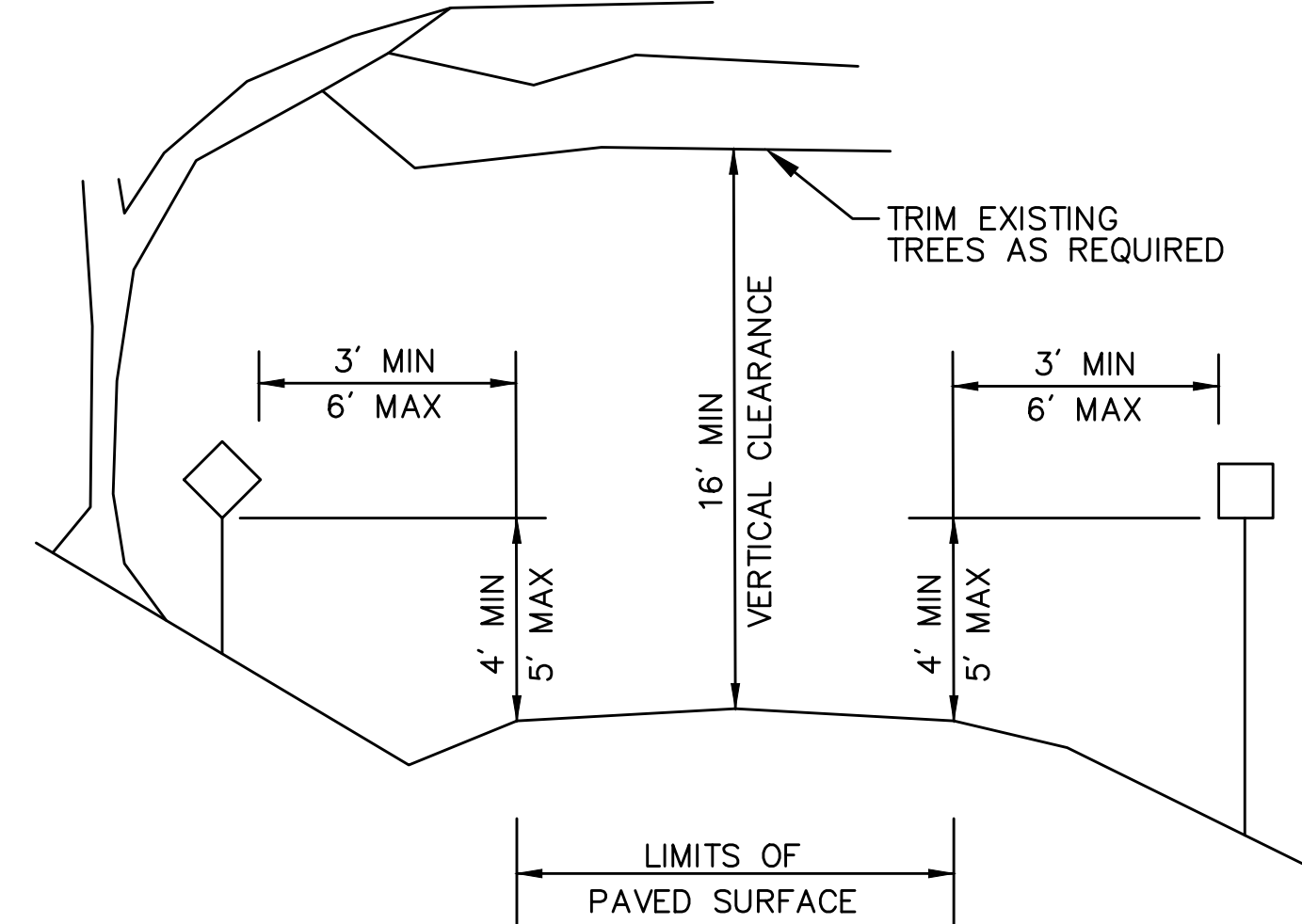
SCALE: NOT TO SCALE
DATE: APRIL 2014
DWG:



*THE LIMITS OF GRADING AND CLEARING ADJACENT TO BRIDGES, WALLS, LEDGE, WETLANDS, OR OTHER OBSTRUCTIONS WILL VARY AND CAN BE LESS THAN THE MINIMUM DIMENSIONS SHOWN.

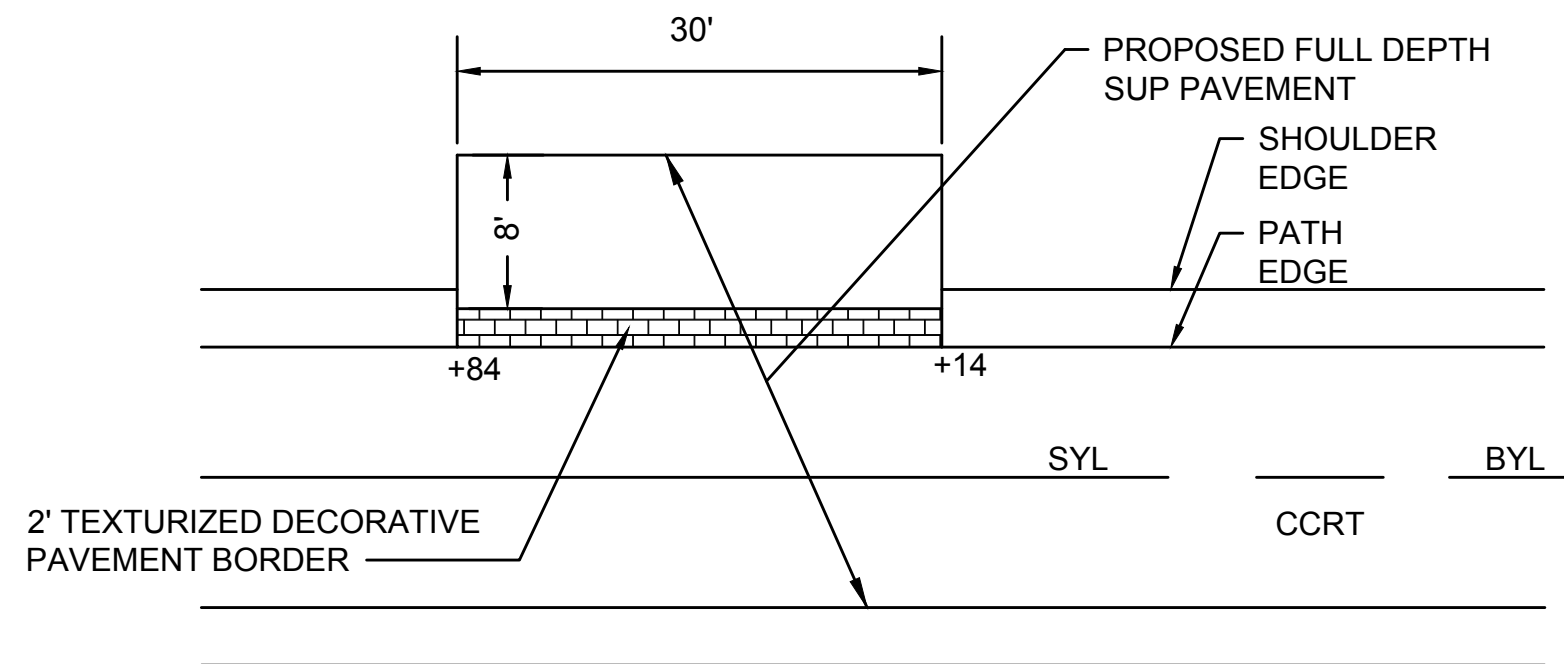
CLEARING AND GRUBBING LIMITS

SCALE: NOT TO SCALE



HORIZONTAL AND VERTICAL CLEARANCES

SCALE: NOT TO SCALE

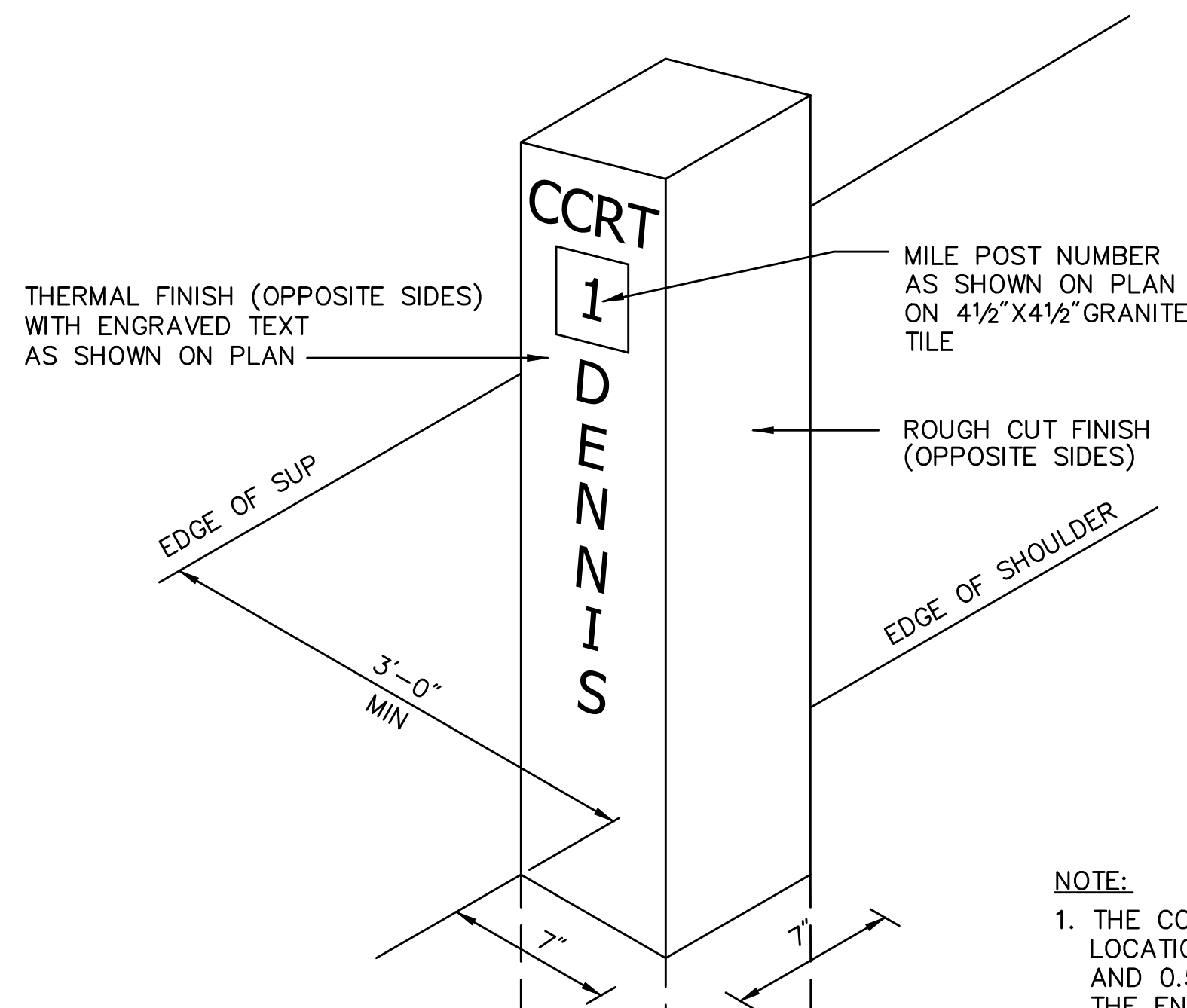


TRAIL PULLOVER AREA, STA 243+00± LT

SCALE: NOT TO SCALE

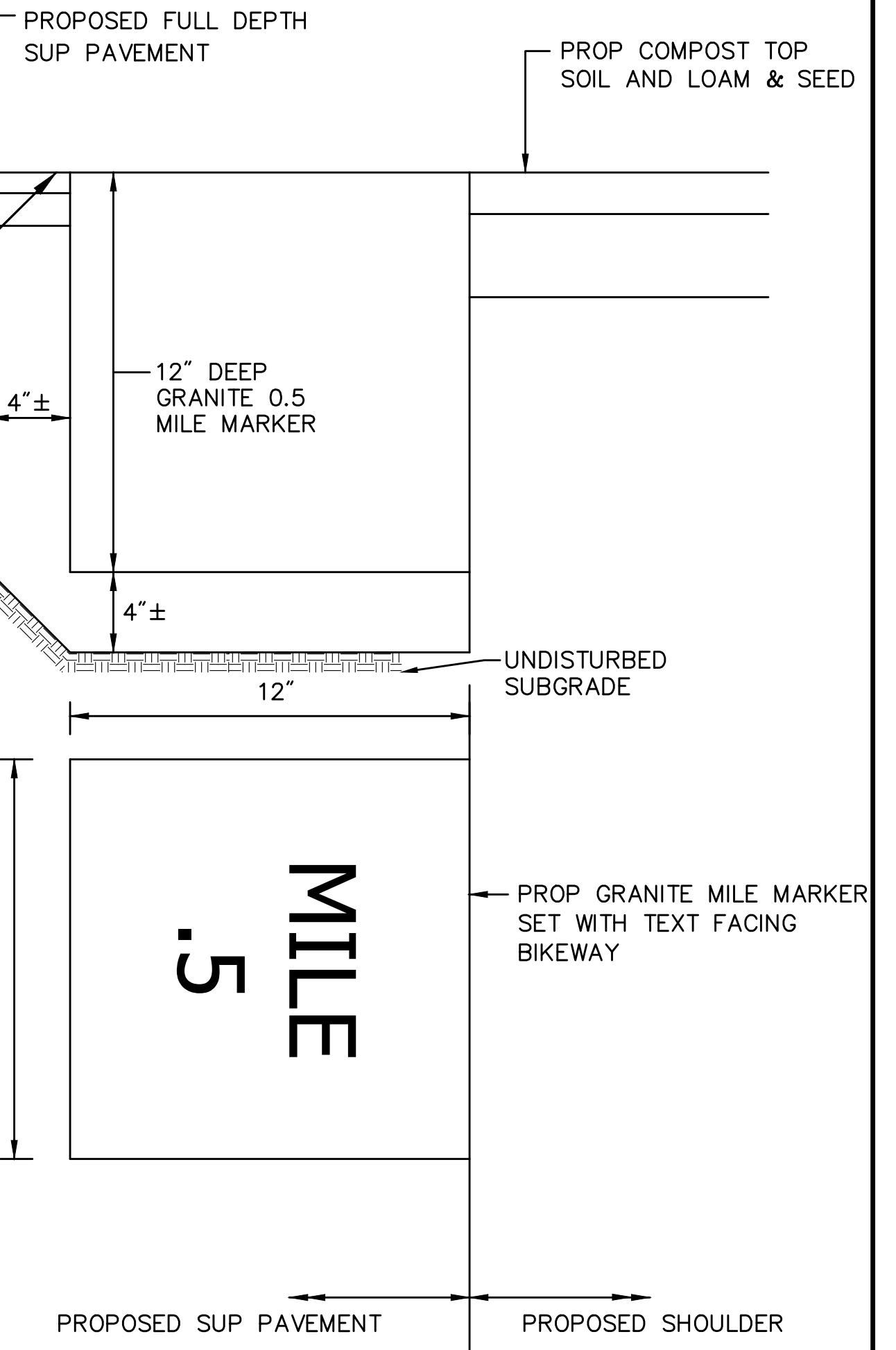
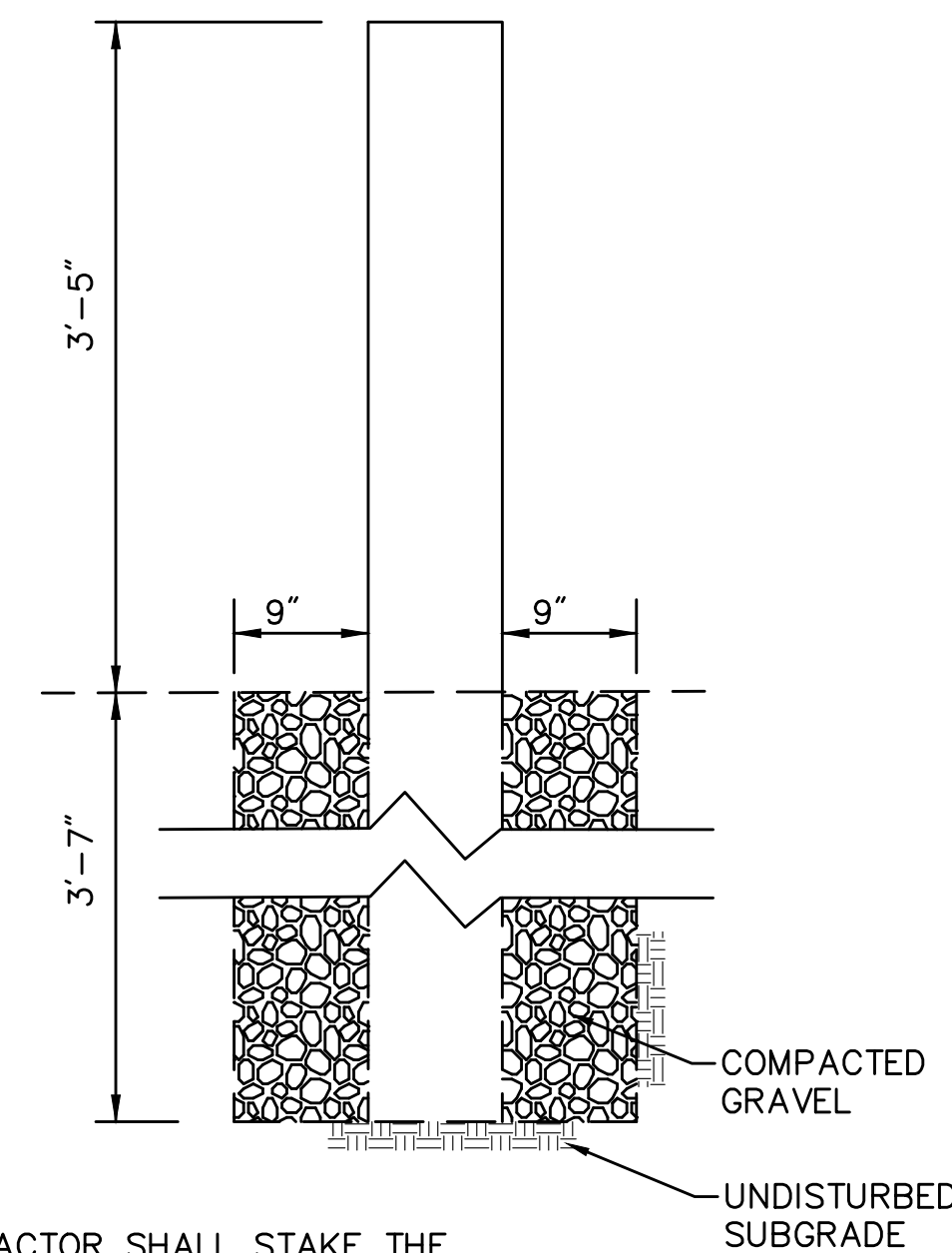
DATE:

DWG:



GRANITE MILE POST

SCALE: NOT TO SCALE



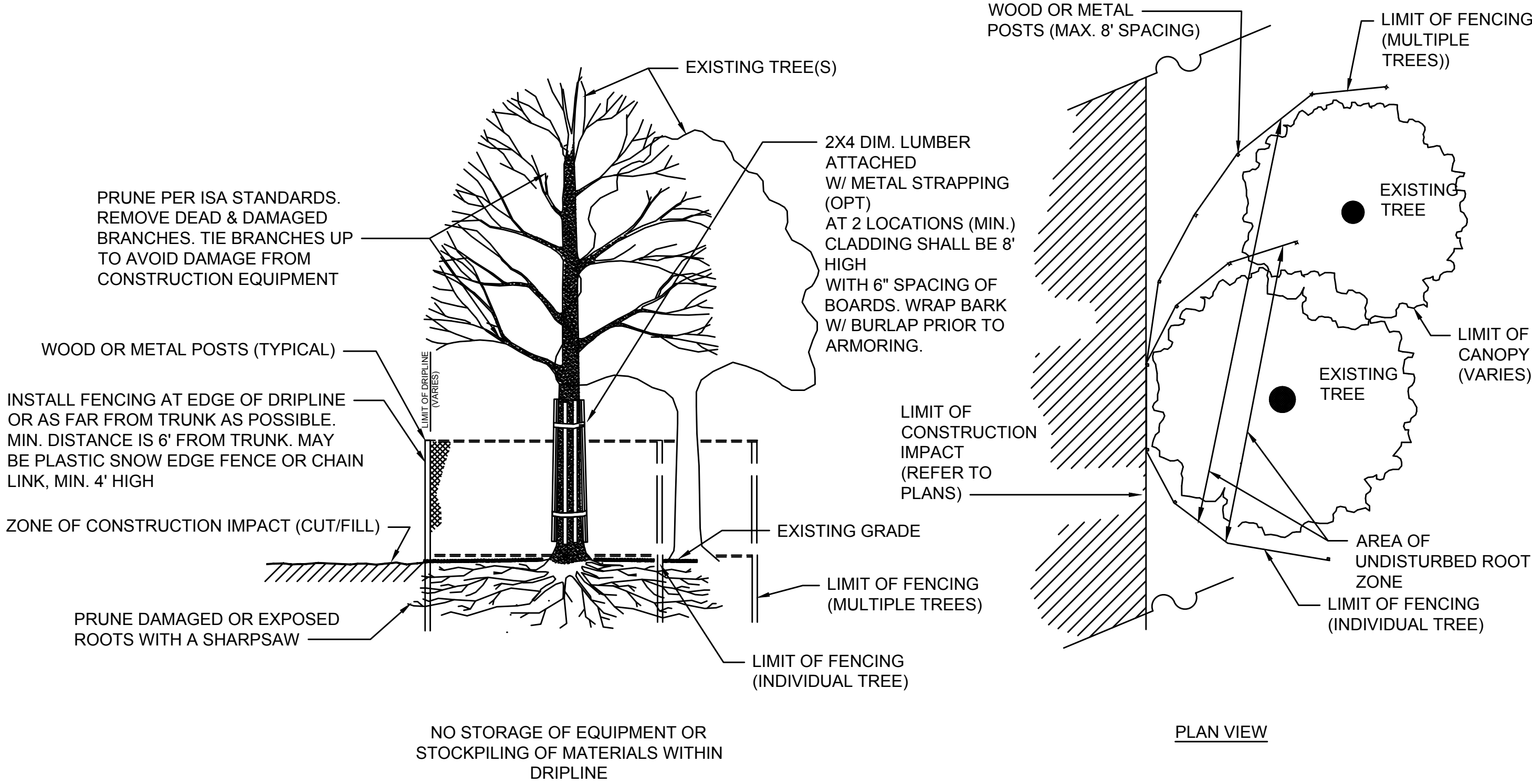
NOTE:

- 0.5 MILE MARKERS SHALL BE PLACED ON THE LEFT SIDE OF THE PATH.

GRANITE 0.5 MILE MARKER

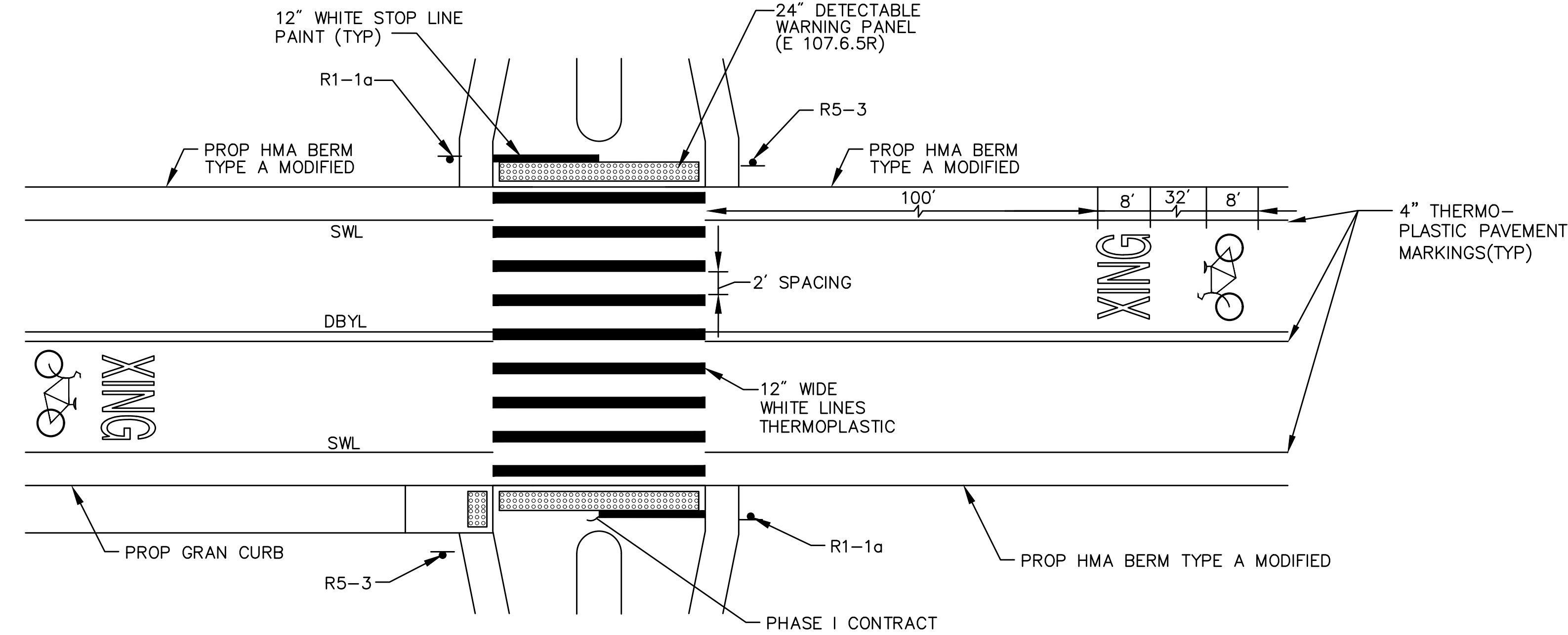
SCALE: NOT TO SCALE

CONSTRUCTION DETAILS



TREE PROTECTION OF EXISTING TREE(S)

SCALE: N.T.S.

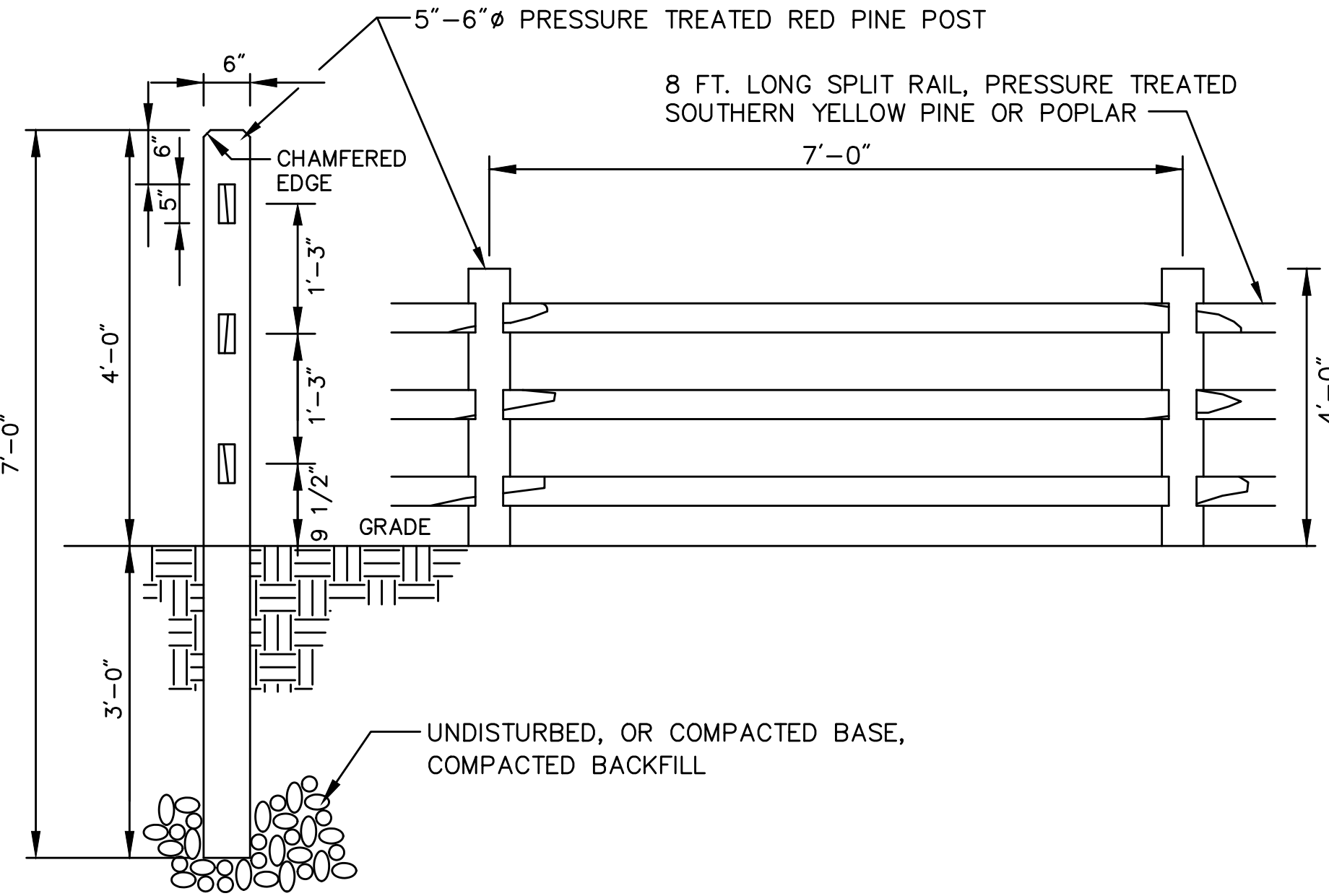


NOTE:
FOR ADDITIONAL ROADWAY SIGNAGE
SEE TRAFFIC PLAN

ROADWAY SIGNAGE AND MARKINGS
AT INTERSECTIONS

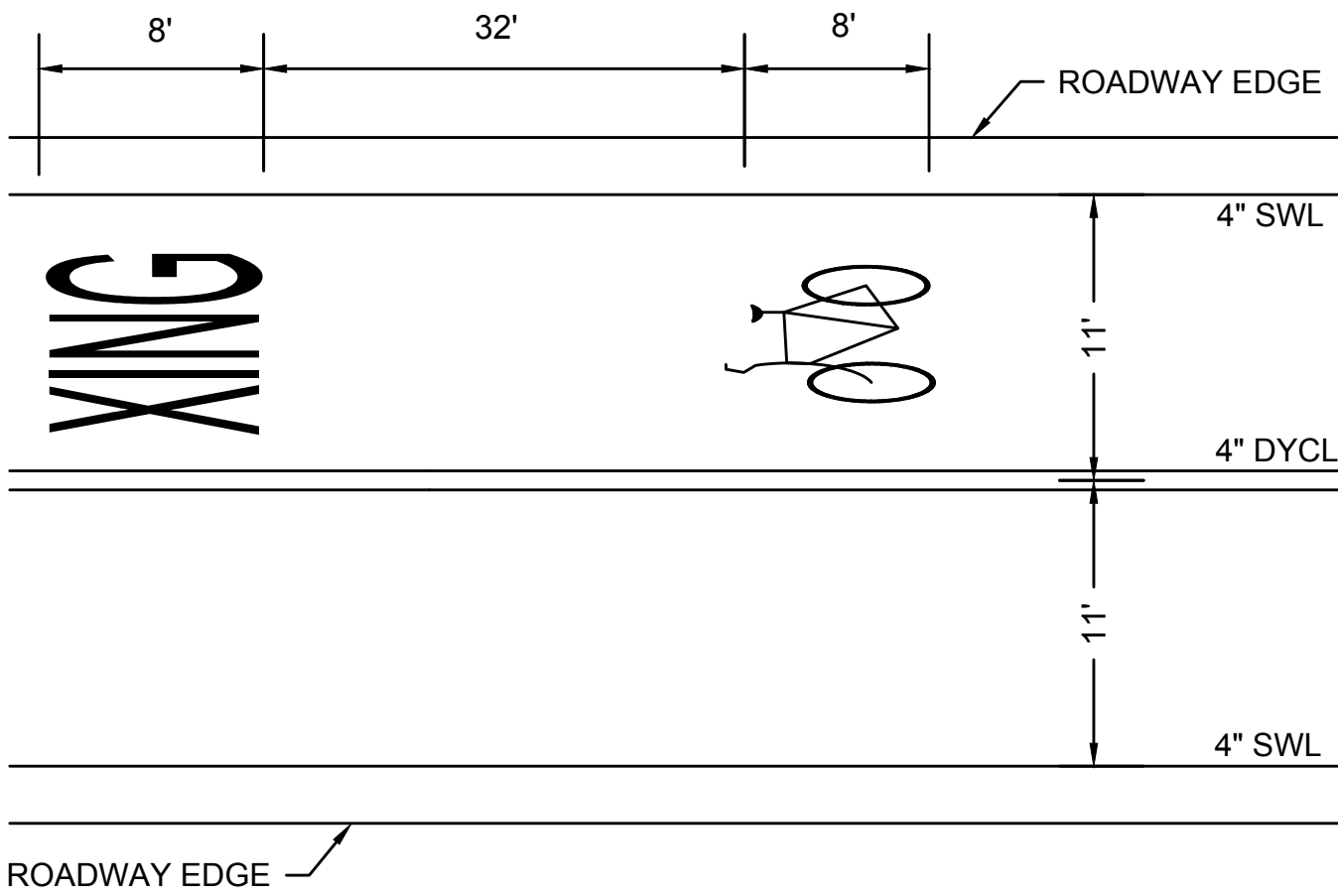
NORTH MAIN STREET AT-GRADE INTERSECTION

SCALE: NOT TO SCALE
DATE:
DWG:



SPLIT RAIL WOOD FENCE

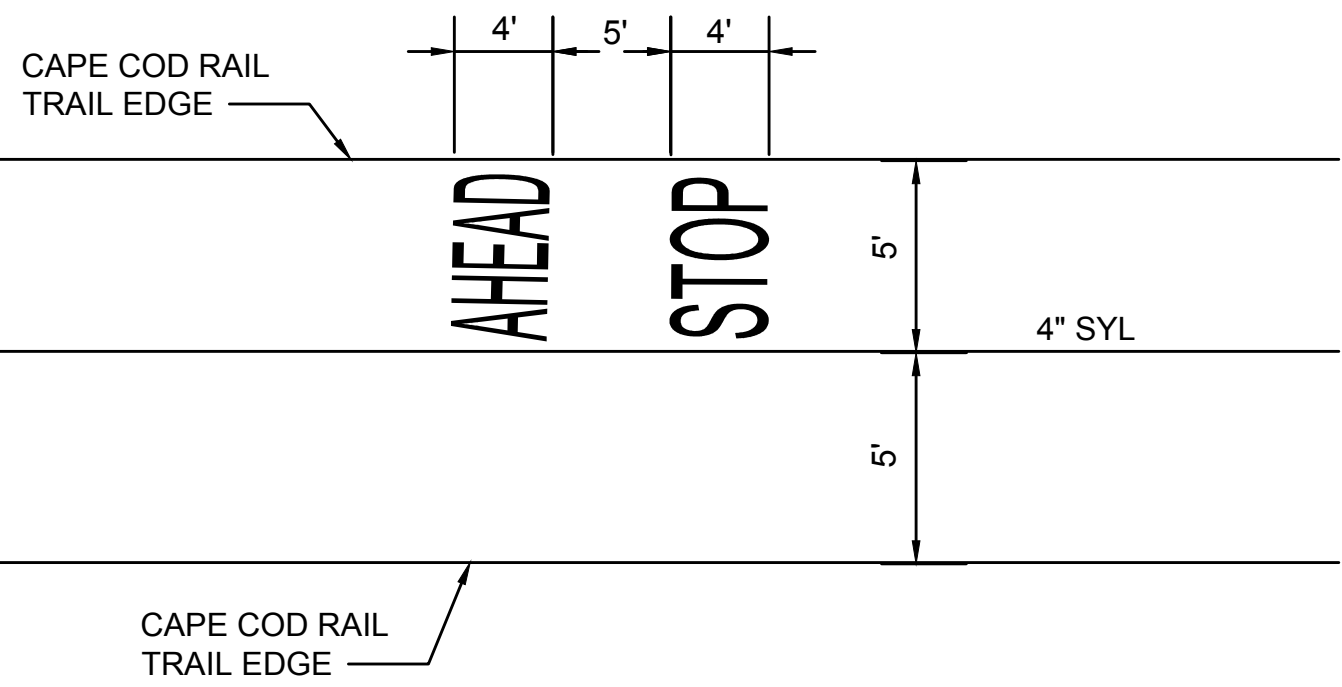
SCALE: NOT TO SCALE
S-STD.
H-STD.



- NOTES:
- PAVEMENT MARKINGS AS PER MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
 - PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.

ROADWAY BICYCLE
PAVEMENT MARKINGS

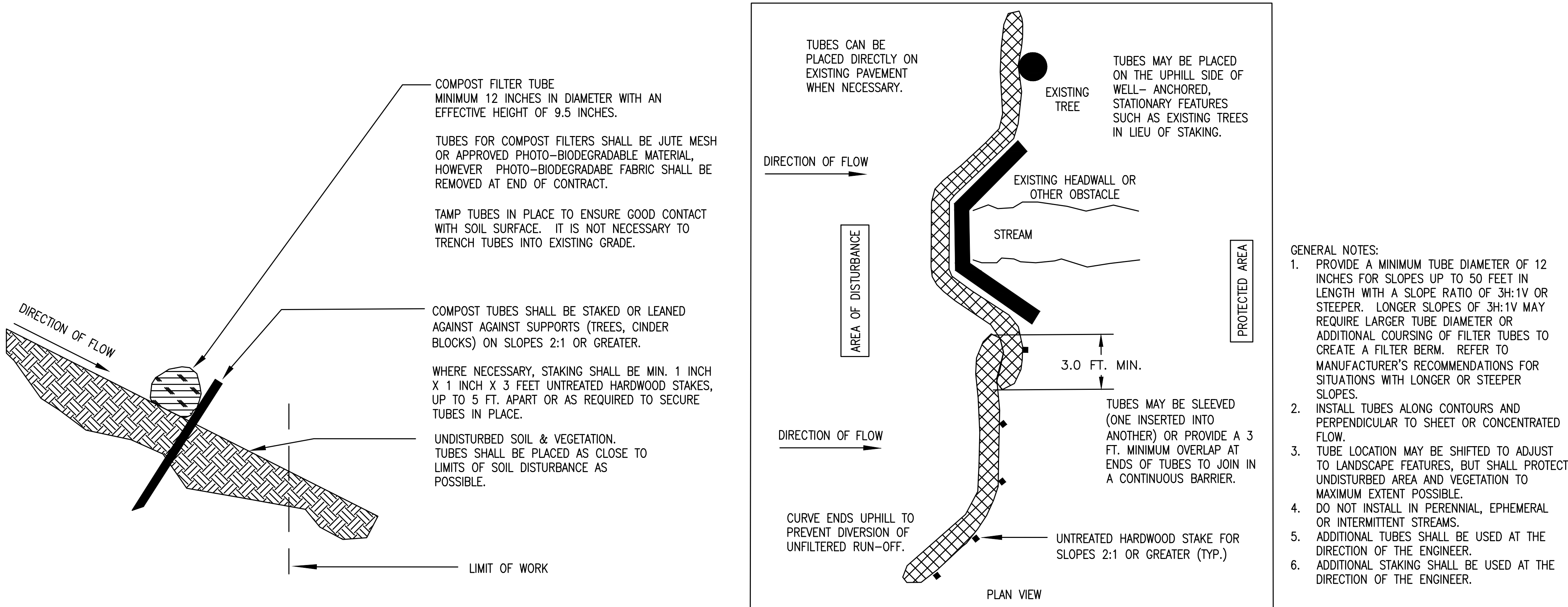
SCALE: NOT TO SCALE
DATE:
DWG:

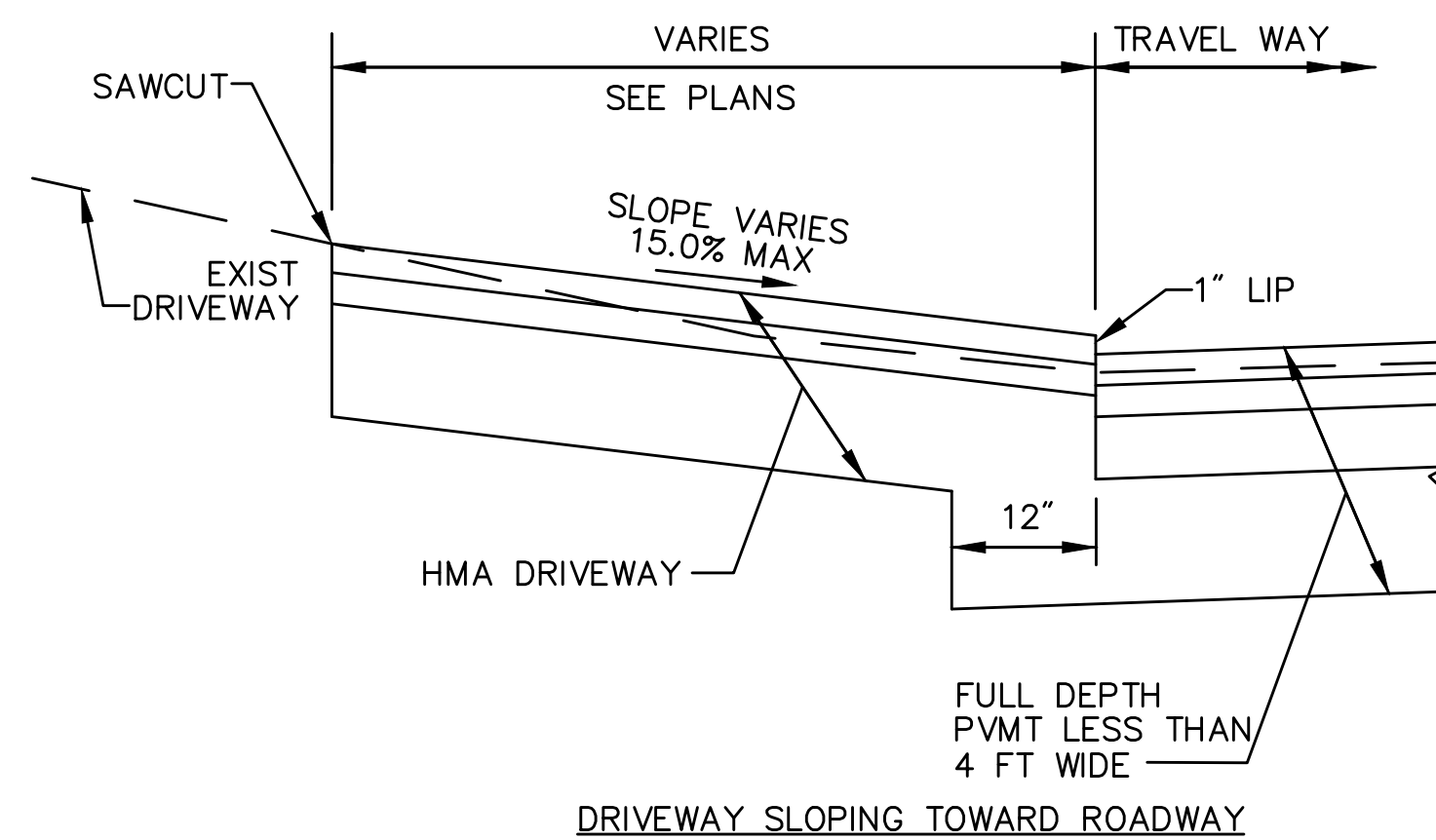


- NOTES:
- PAVEMENT MARKINGS AS PER MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
 - PAVEMENT MARKINGS SHALL BE REFLECTIVE PAINT.

CAPE COD RAIL TRAIL
PAVEMENT MARKINGS

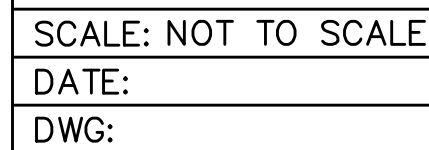
SCALE: NOT TO SCALE
DATE:
DWG:



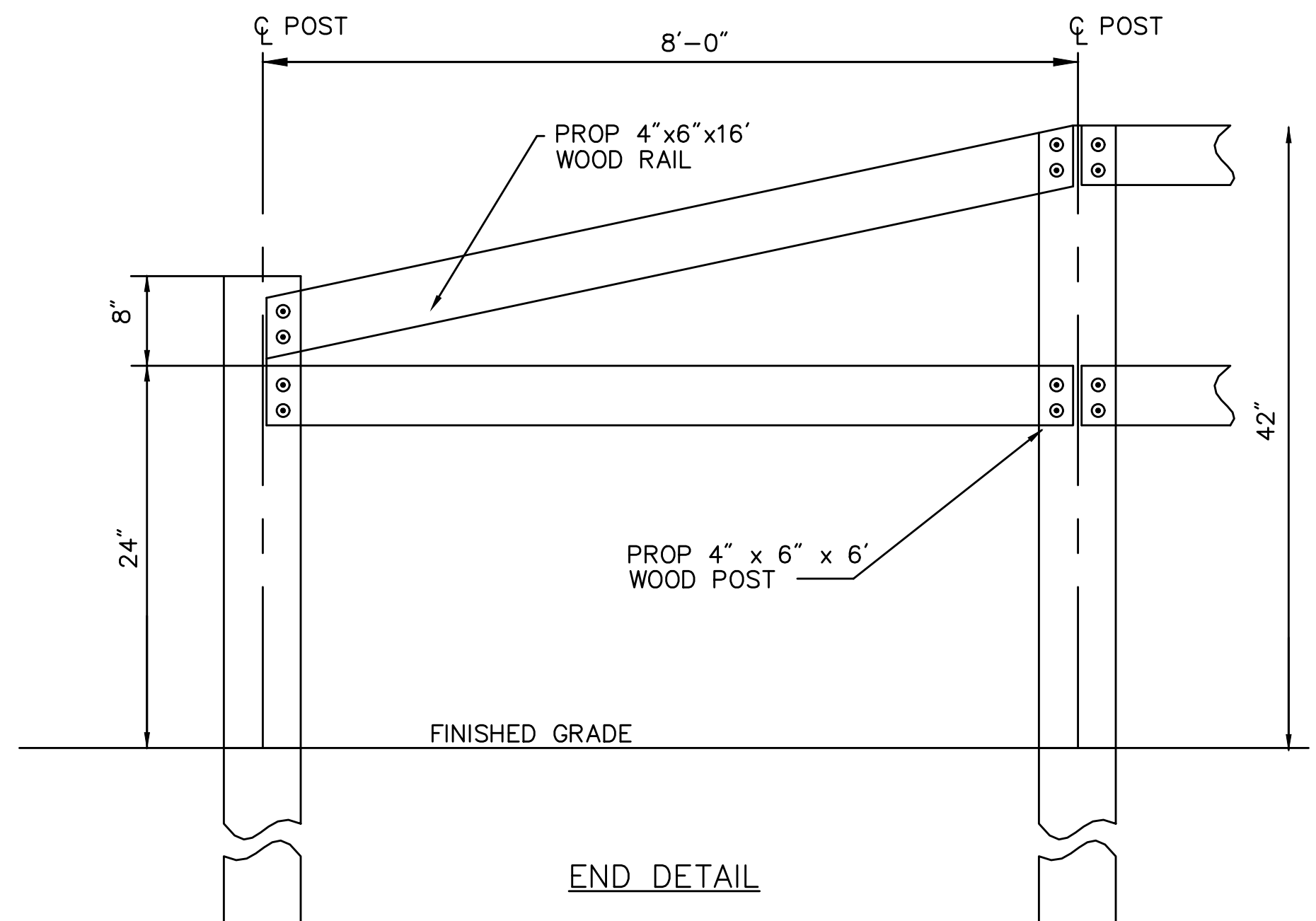


SCALE: NOT TO SCALE
DATE:
DWG:

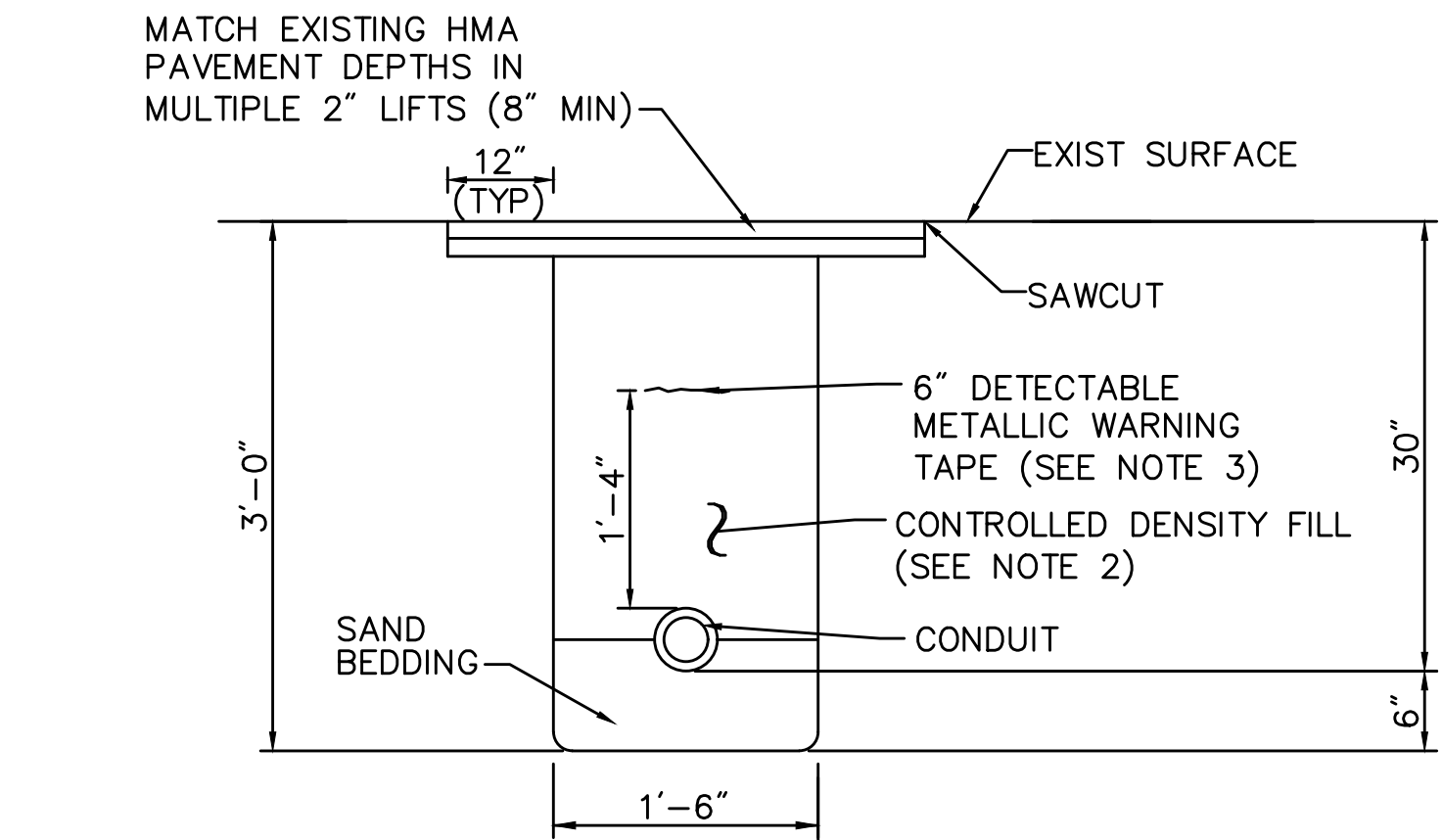
- | |
|---------------------|
| SCALE: NOT TO SCALE |
| DATE: JUNE 2008 |
| DWG: LD-470 |



- | | |
|--------|--------------|
| SCALE: | NOT TO SCALE |
| DATE: | APRIL 2003 |
| DWG: | GRD-06 |

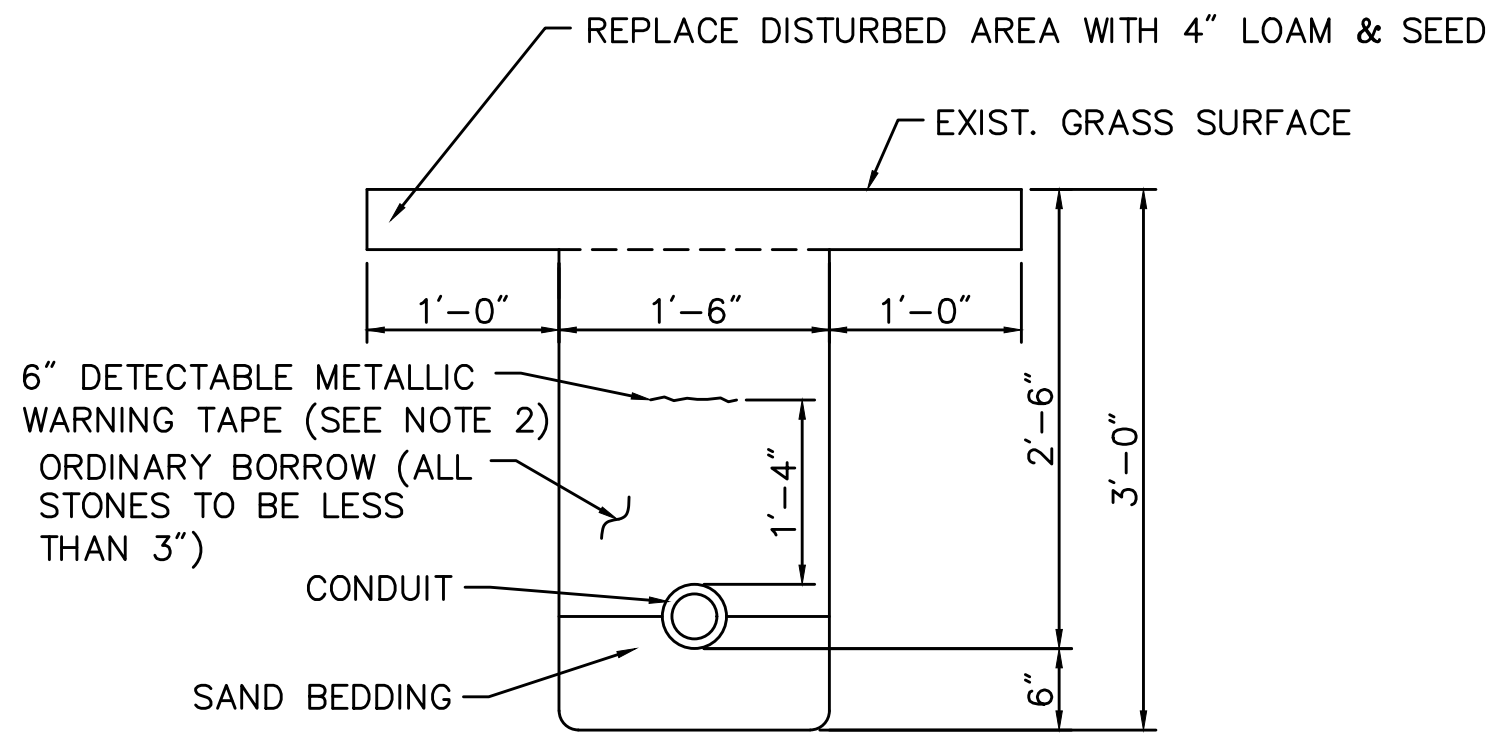


CONSTRUCTION DETAILS

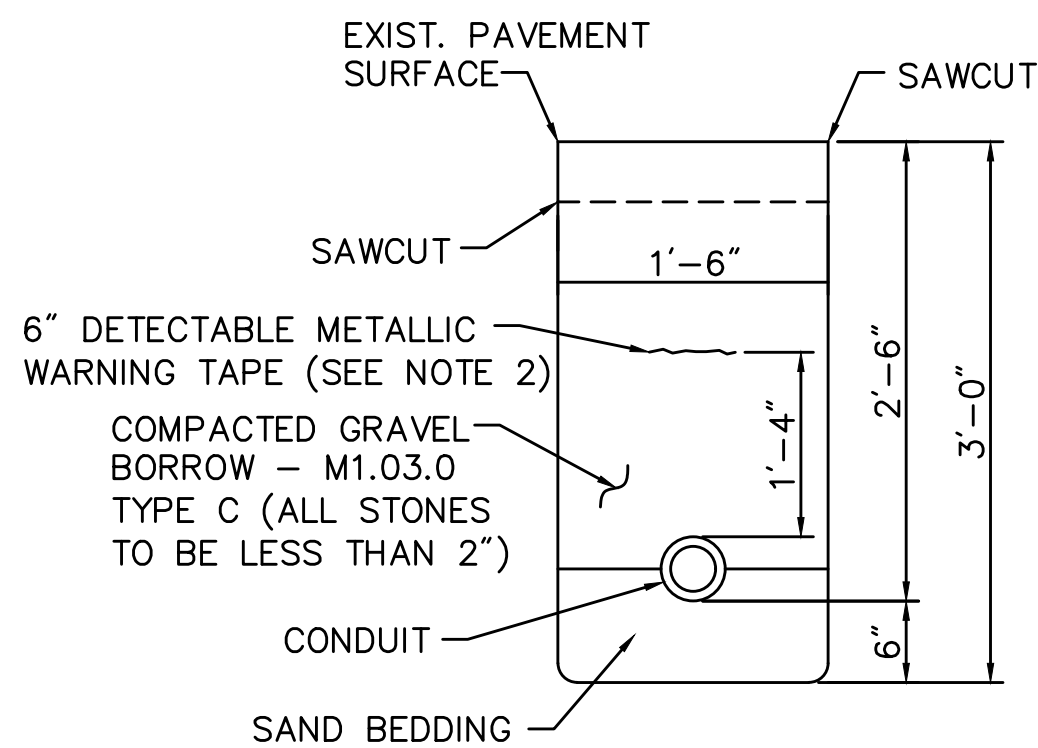


- NOTES:
1. SCHEDULE 80 ELECTRICAL CONDUIT TYPE NM-PLASTIC (UL.), WITH PULL ROPE, UNLESS OTHERWISE APPROVED BY MASSDOT.
 2. CONTROL DENSITY FILL SHALL MEET THE REQUIREMENTS OF SUBSECTION M4.08.0
 3. WARNING TAPE SHALL BE PER CURRENT APWA STANDARDS.

CONDUIT CROSSING ROADWAY	
SCALE: NOT TO SCALE	
DATE: APRIL 2003	
DWG: TRENCH-01	

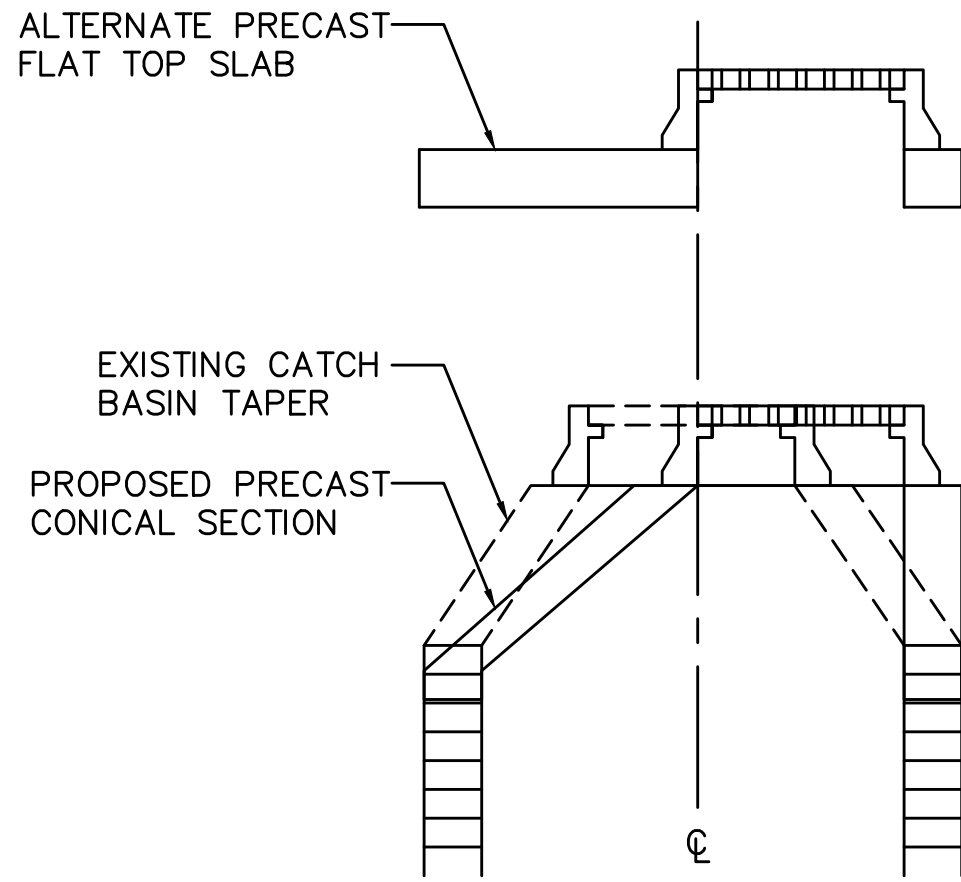


- NOTES:
1. SCHEDULE 80 ELECTRICAL CONDUIT NM-PLASTIC (UL), WITH PULL ROPE, UNLESS OTHERWISE APPROVED BY MASSDOT.
 2. WARNING TAPE SHALL BE PER CURRENT APWA STANDARD.



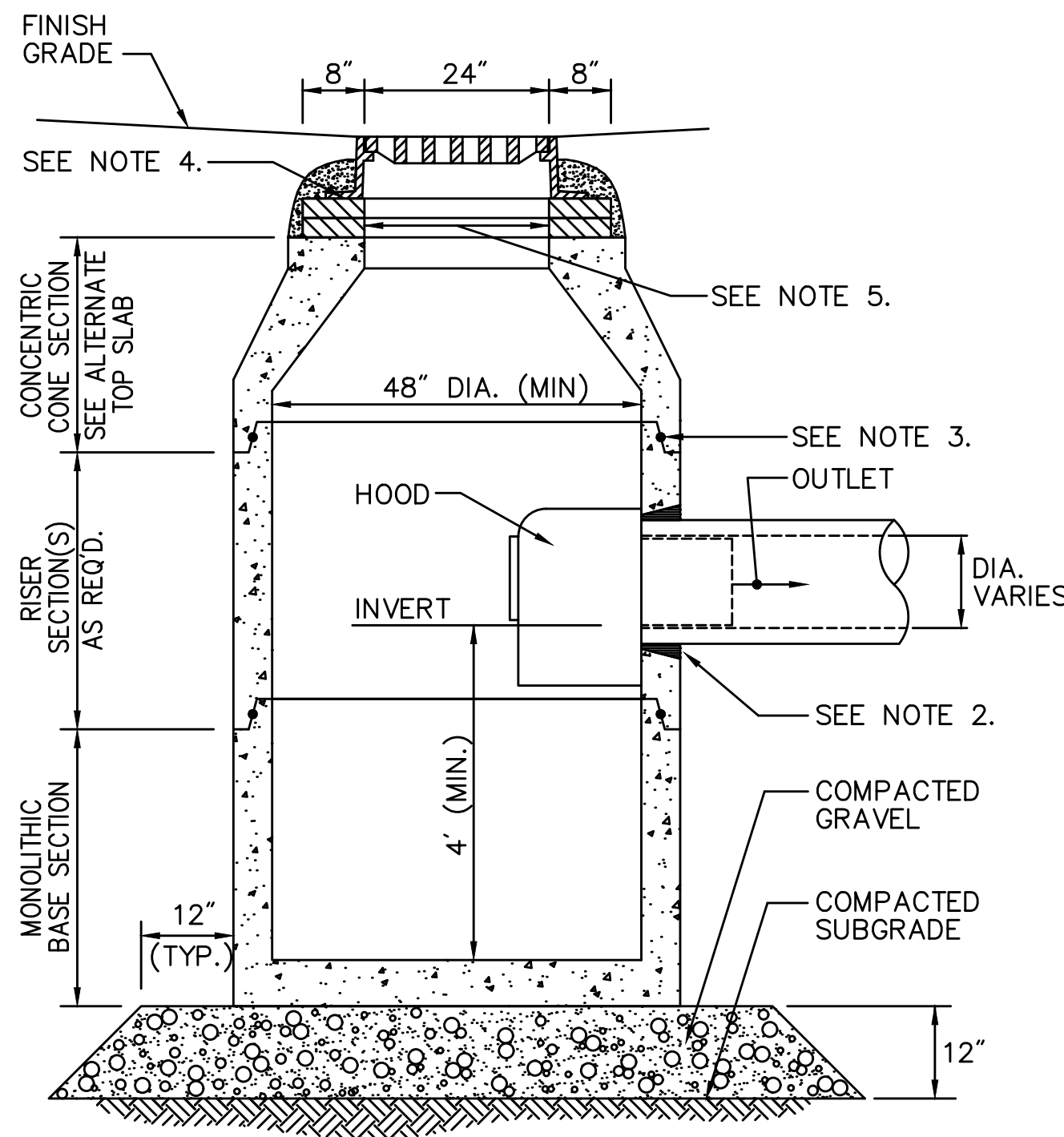
- NOTES:
1. SCHEDULE 80 ELECTRICAL CONDUIT NM-PLASTIC (UL), WITH PULL ROPE, UNLESS OTHERWISE APPROVED BY MASSDOT.
 2. WARNING TAPE SHALL BE PER CURRENT APWA STANDARD.

CONDUIT UNDER SIDEWALK/GRASS AREAS	
SCALE: NOT TO SCALE	
DATE: -	
DWG: -	



- NOTE:
- BASED ON ACTUAL FIELD CONDITIONS; THE CONTRACTORS SHALL DETERMINE WHICH STYLE OF TOP SECTION SHOULD BE USED.

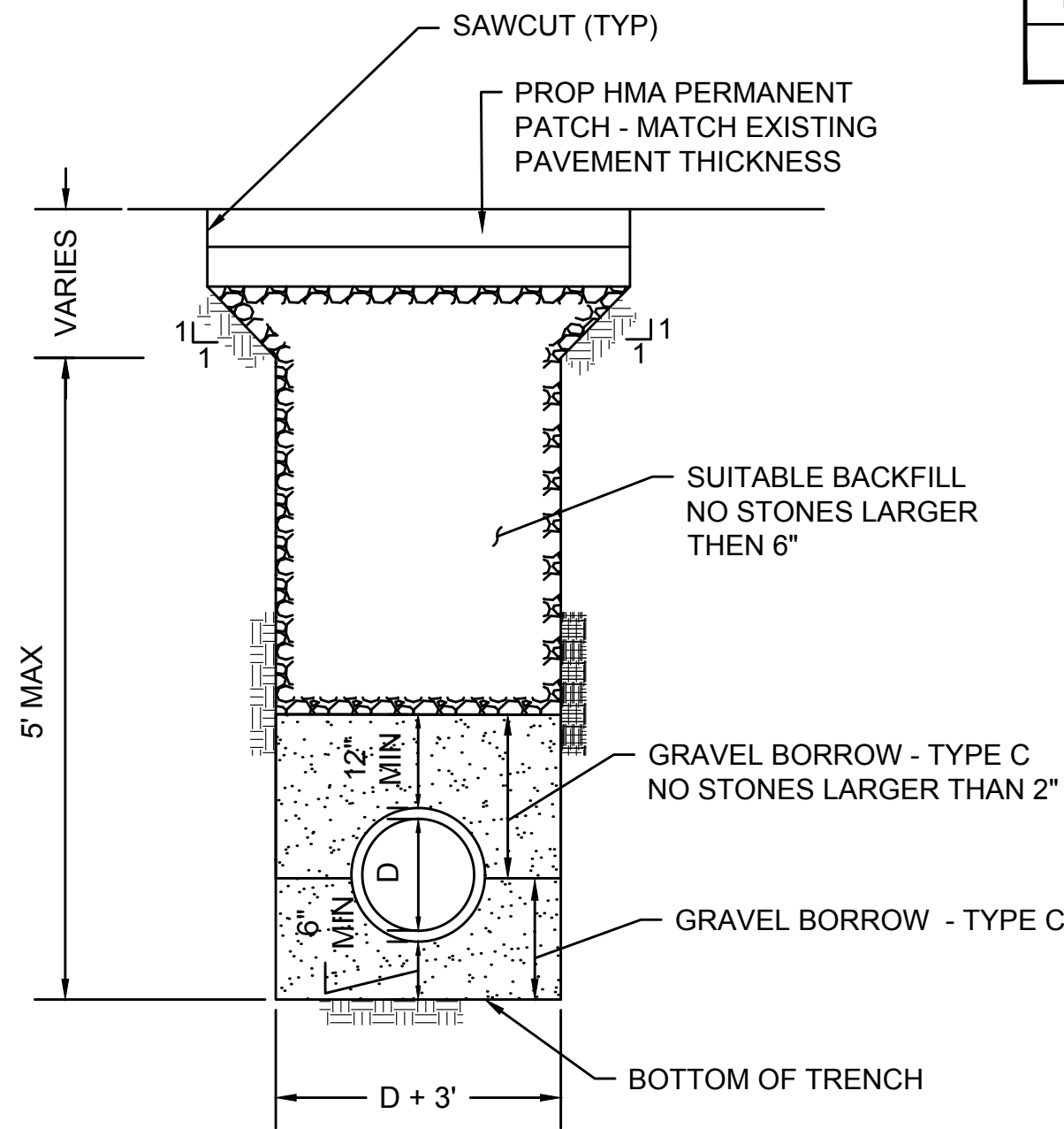
DRAINAGE STRUCTURE REMODEL	
SCALE: NTS	



CATCH BASIN

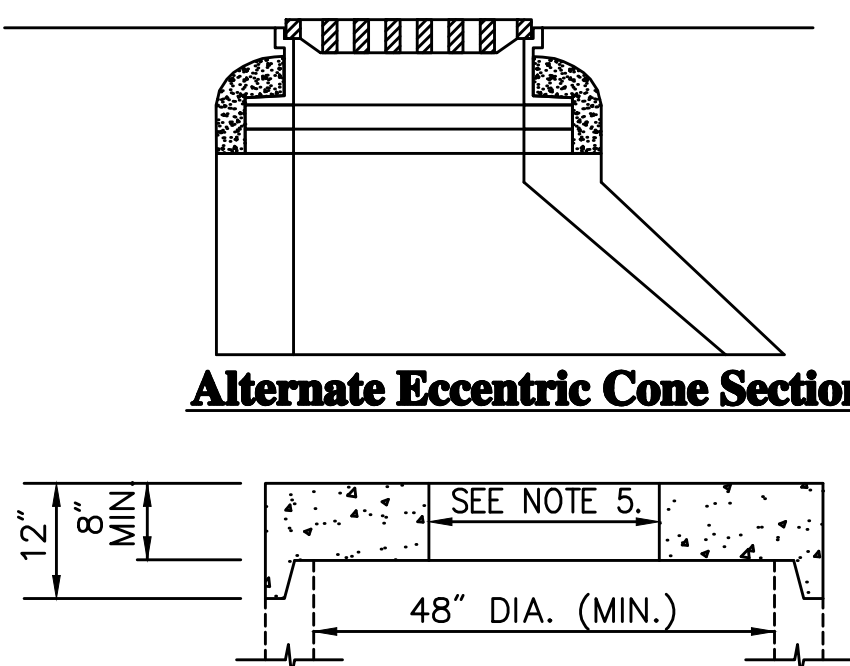
SCALE: NOT TO SCALE
DATE: 10-28-2008
DWG: -

YARMOUTH & DENNIS CAPE COD RAIL TRAIL EXTENSION - PHASE II			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	28	68
PROJECT FILE NO. 607571			
CONSTRUCTION DETAILS			



TRENCH DETAIL

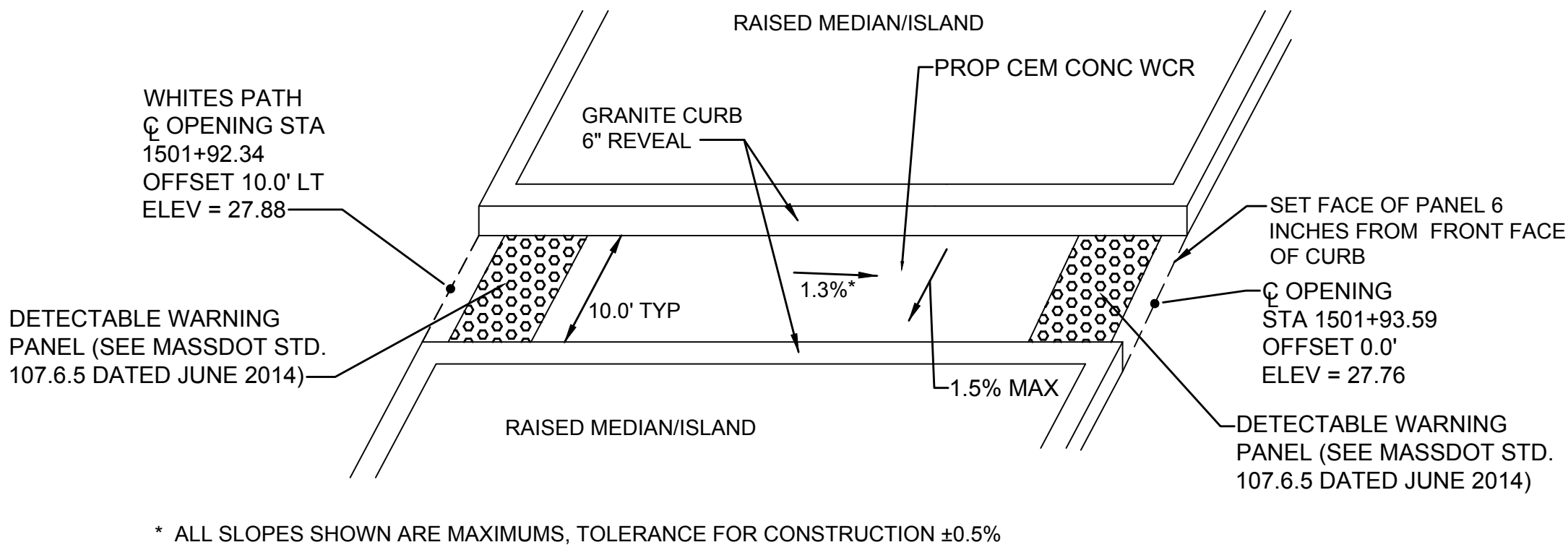
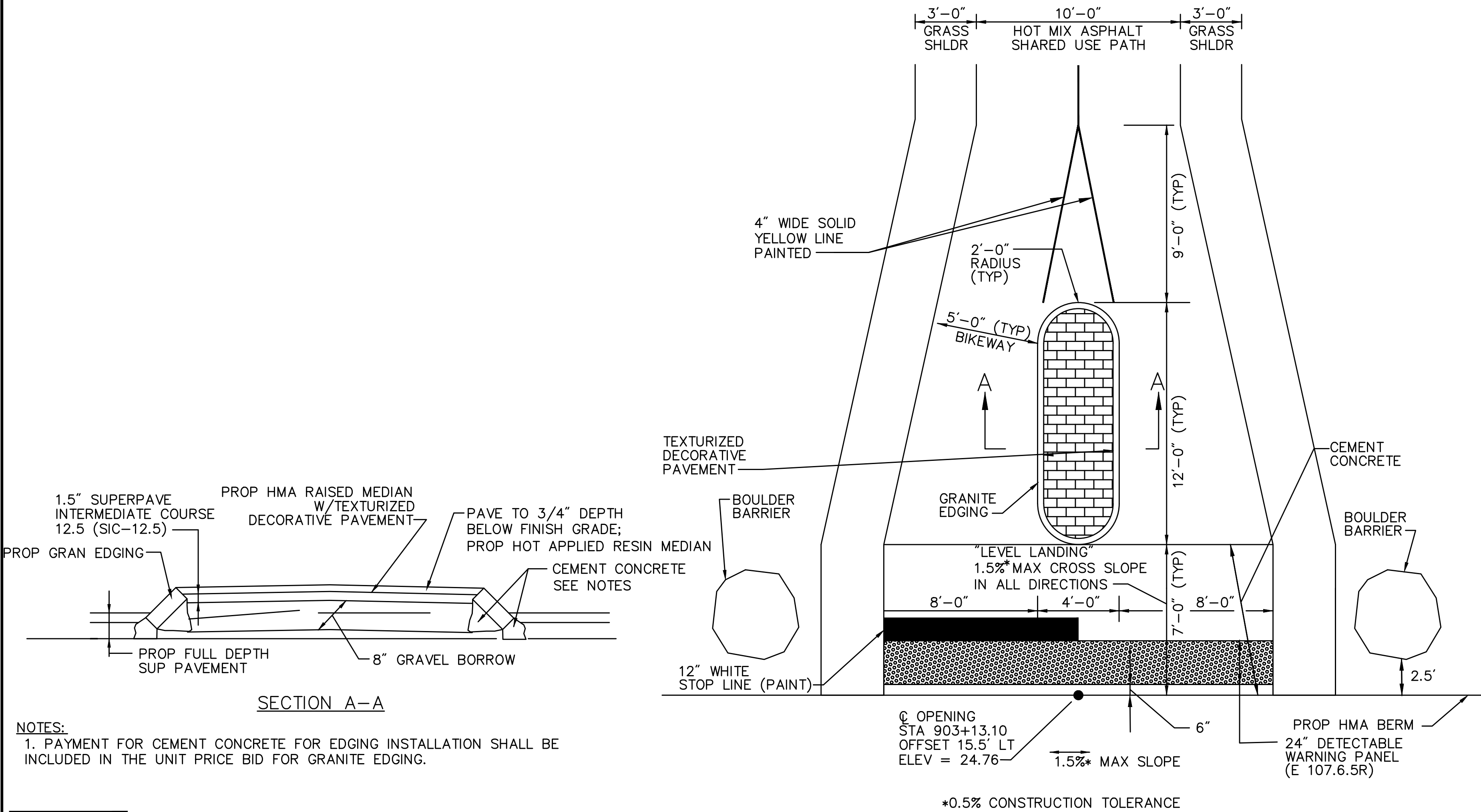
SCALE: NOT TO SCALE
TRENCH-05
MARCH 2013



Alternate Top Slab

Notes:

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM).
5. OPENING IN TOP SLAB SHALL BE 24"x27" FOR CATCH BASINS WITH CURB INLETS. OPENING SHALL BE 24"x24" AT ALL OTHER LOCATIONS.

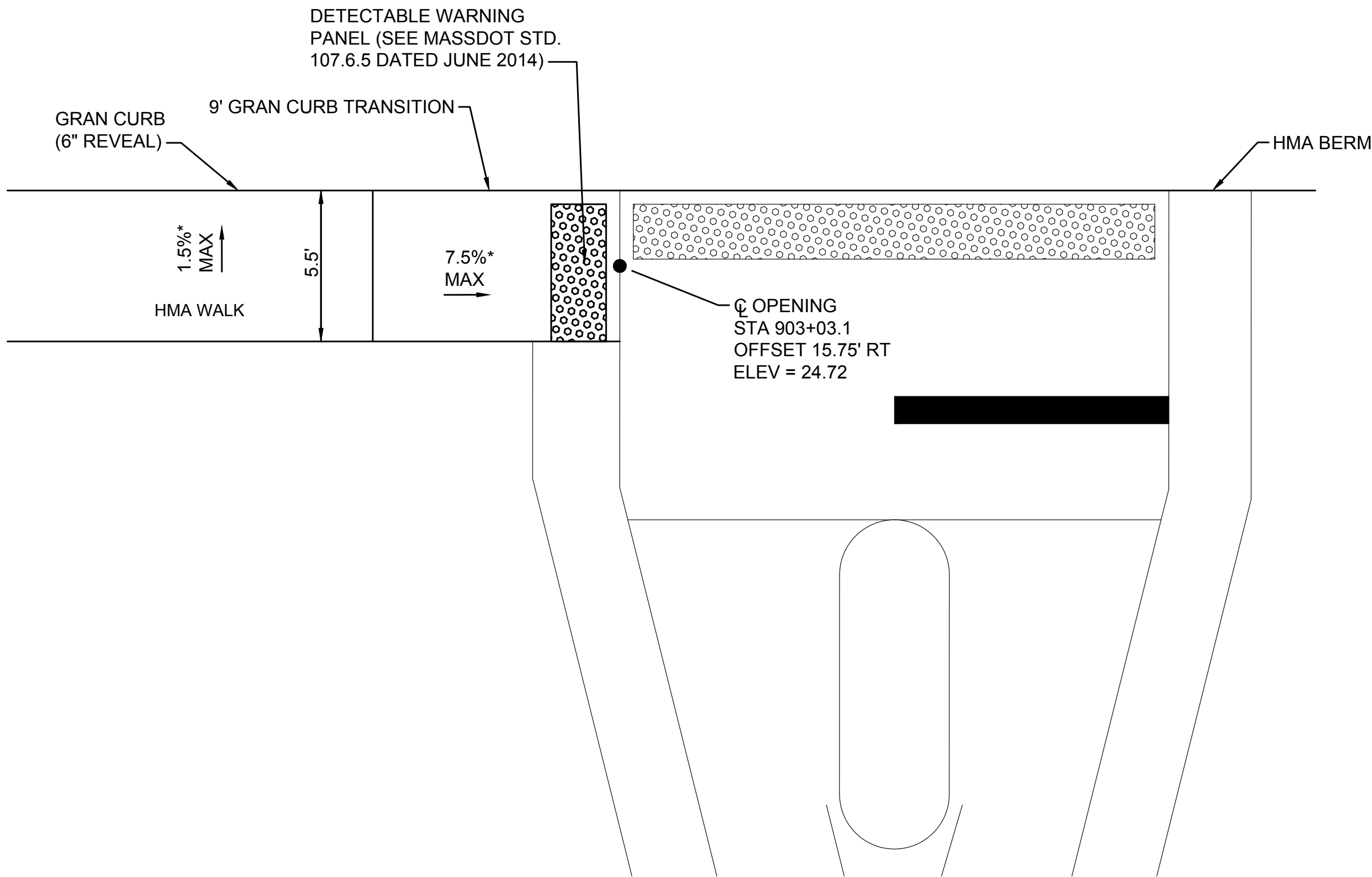


WHEELCHAIR RAMP 4

SCALE: NTS

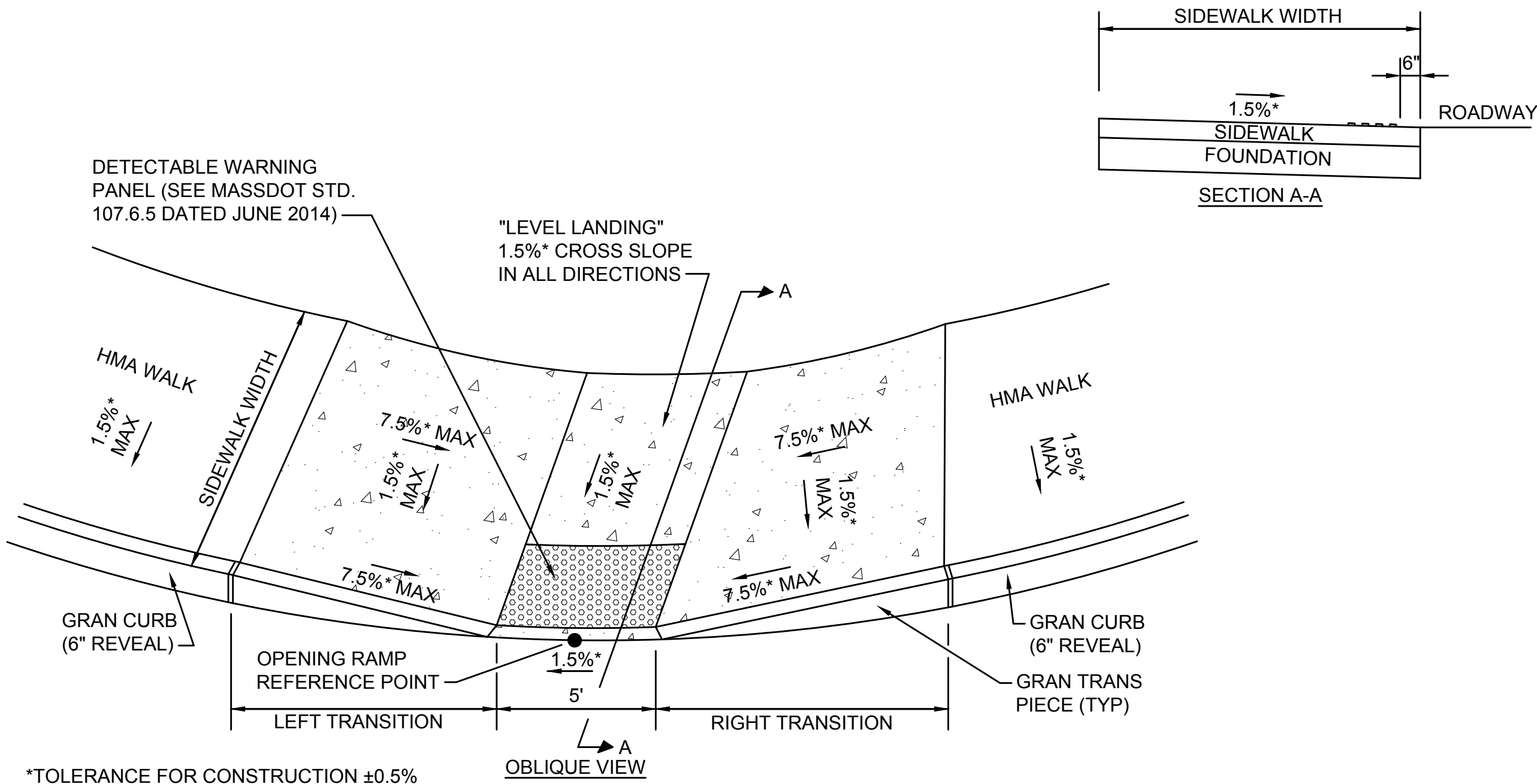
SPLITTER ISLAND AND SHARED USE PATH WHEELCHAIR RAMP 3

SCALE: NOT TO SCALE
DATE: DEC 2005
DWG:



WHEELCHAIR RAMP 5

SCALE: NTS

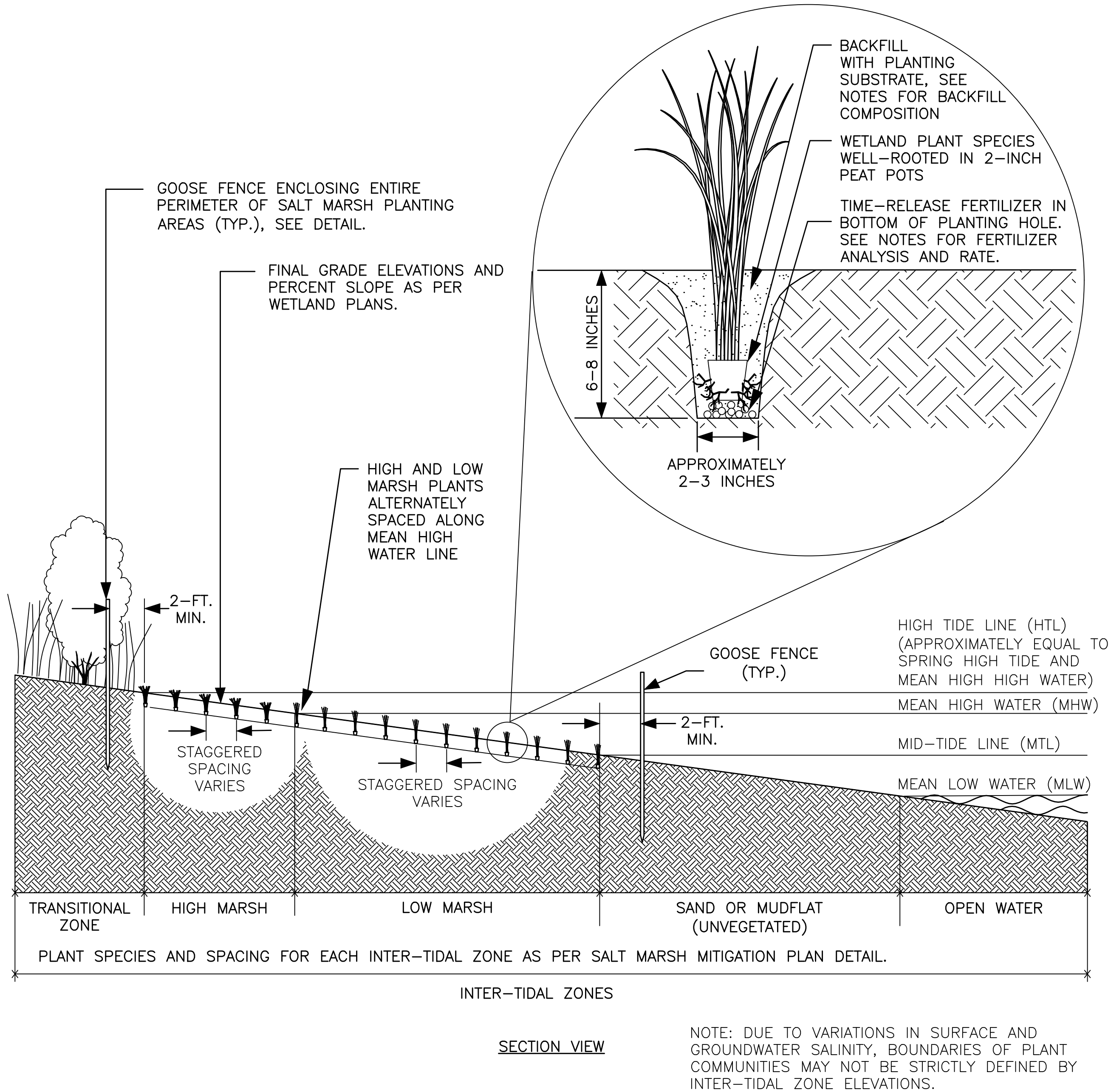


WHEELCHAIR RAMP LESS THAN 6' WIDE

SCALE: NTS

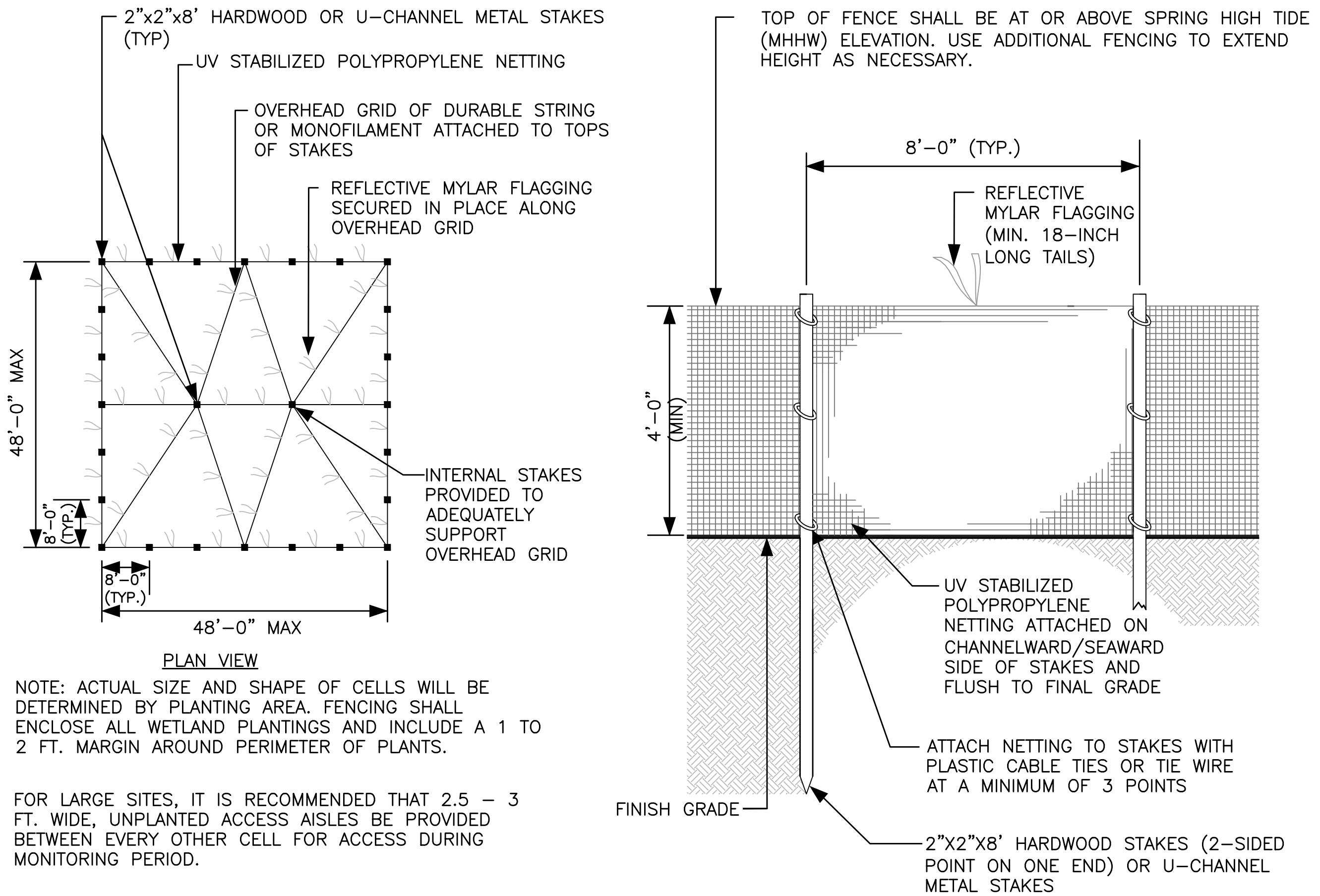
WHEELCHAIR RAMP DATA									
NO.	LOCATION	SIDEWALK WIDTH	LEFT SIDE			RIGHT SIDE			OPENING ELEV
			ROADWAY GUTTER	REVEAL	TRANS	ROADWAY GUTTER	REVEAL	TRANS	
1	1501+80.2 48.2' LT	5'-6"	-13.2%	6"	6'-6"	7.5%	6"	15'-0"	28.7'
2	1501+95.7 37.1' RT	5'-6"	2.98%	6"	11'-0"	3.2%	6"	6'-6"	27.1'

NOTE: NEGATIVE (-) ROADWAY GUTTER SLOPE DENOTES A LOW SIDE TRANSITION.



TYPICAL TIDAL WETLAND PLANTING

SCALE: NTS



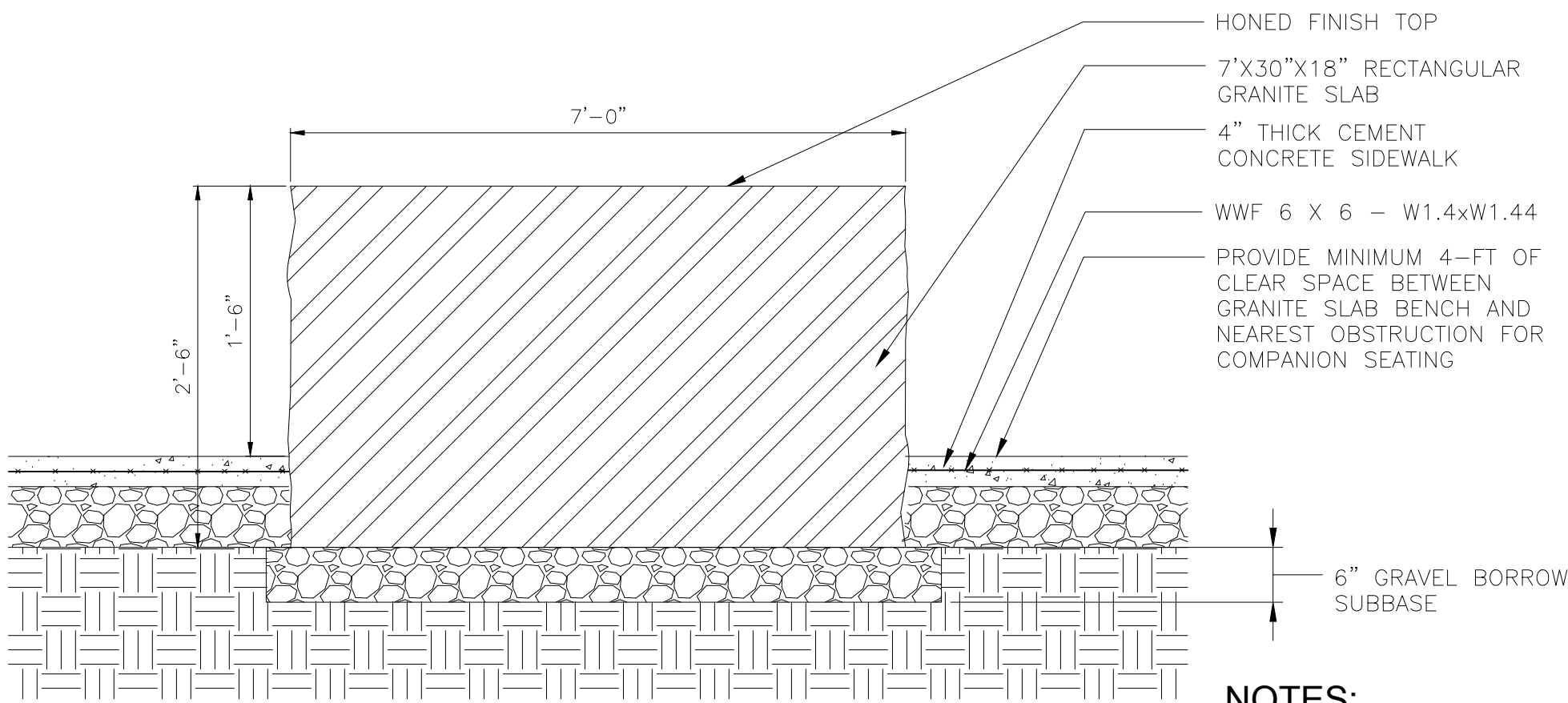
TYPICAL GOOSE FENCE

SCALE: NTS

YARMOUTH & DENNIS
CAPE COD RAIL TRAIL EXTENSION - PHASE II

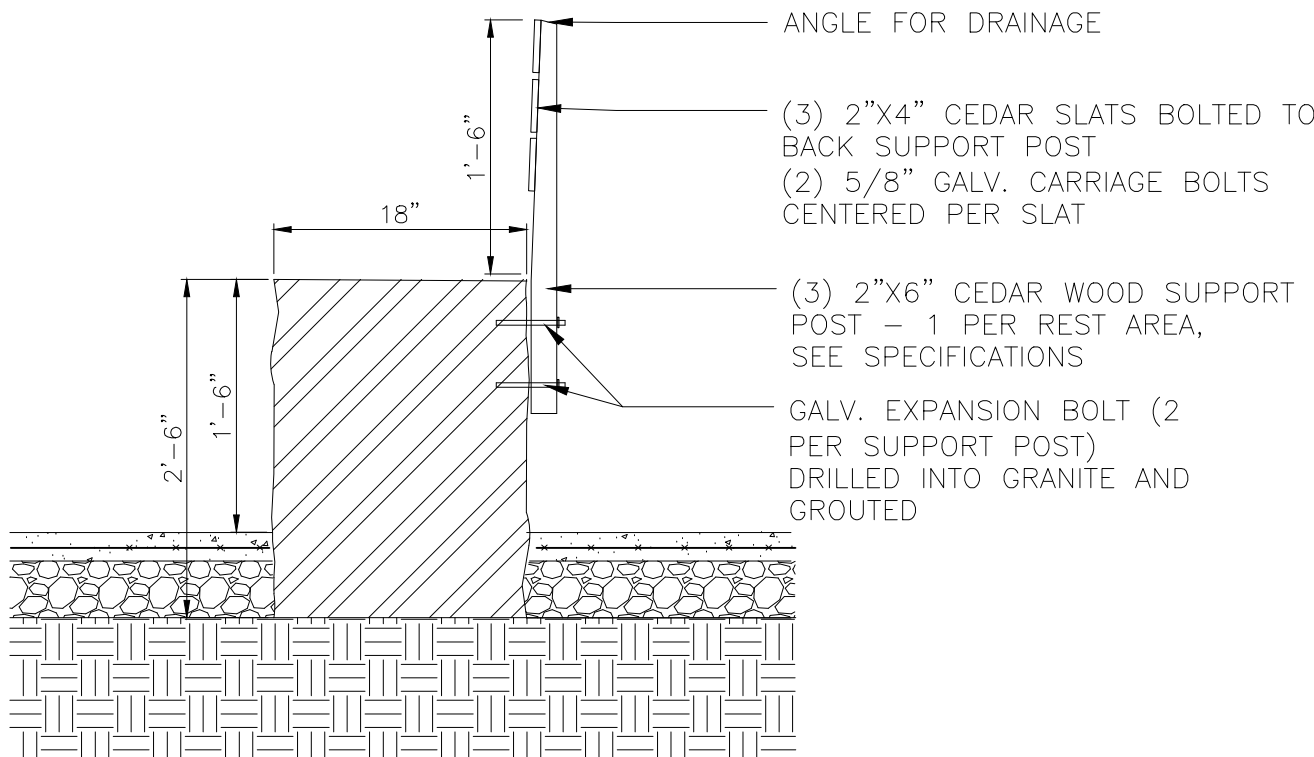
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	31	68
PROJECT FILE NO. 607571			

CONSTRUCTION DETAILS

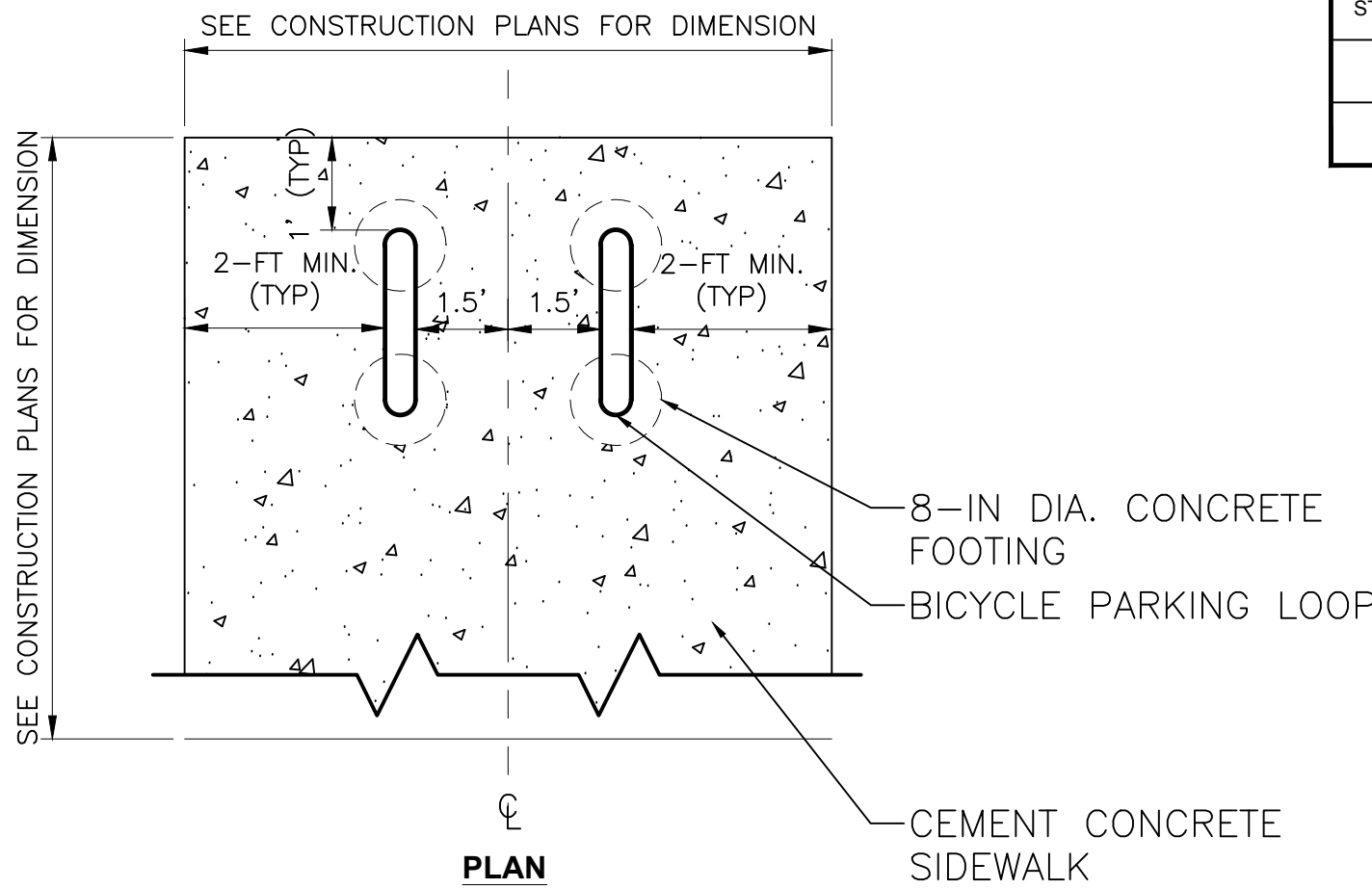


7-FT GRANITE SLAB BENCH
NOT TO SCALE

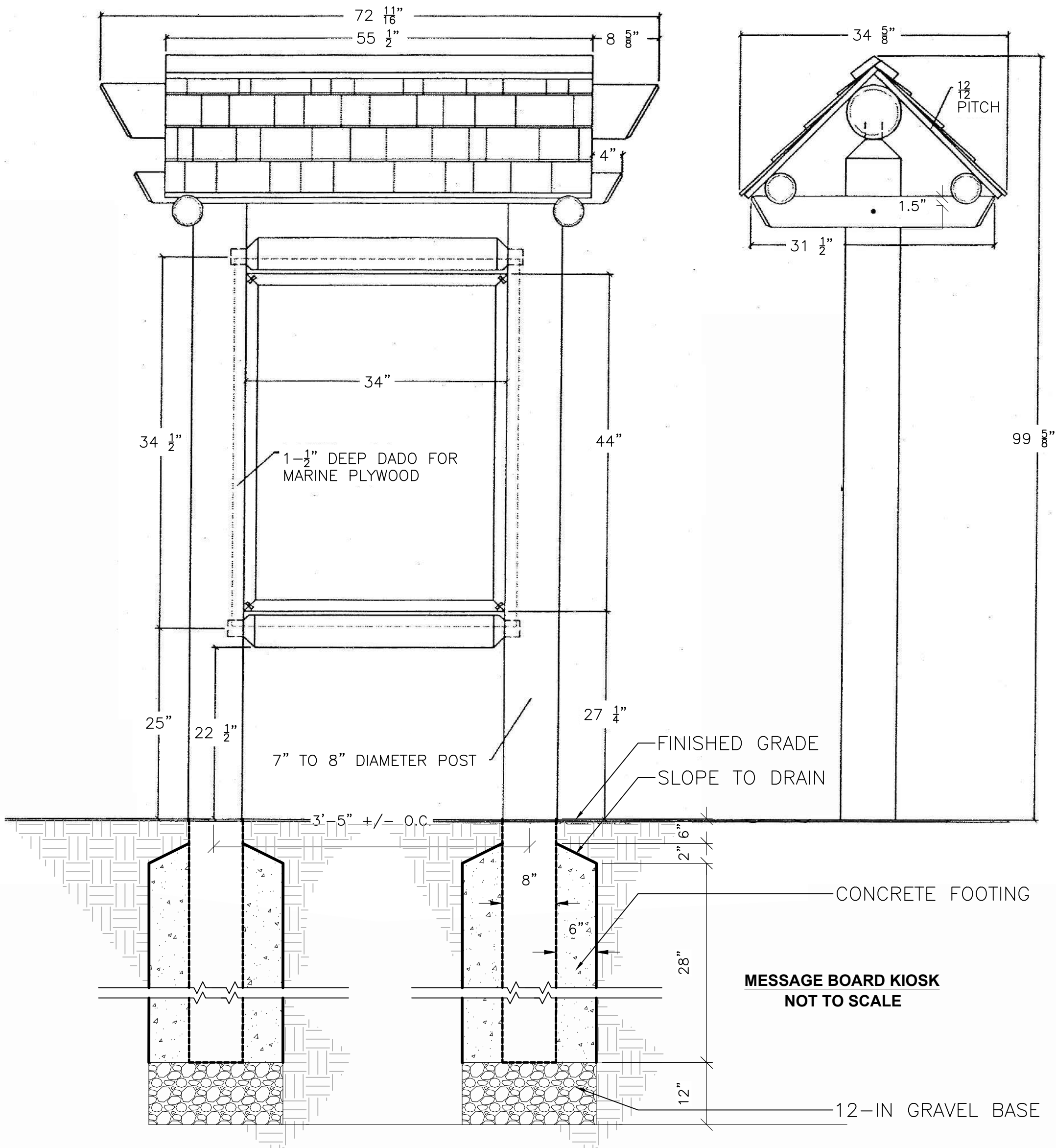
- NOTES:
- EACH BENCH SHALL INCORPORATE 2.5 FT x 4 FT CLEARANCE ADJACENT TO NARROW END AS SHOWN ON DRAWINGS TO ACCOMMODATE ACCESSIBLE COMPANION SEATING.
 - ALL EXPOSED FACES, EXCEPT TOP, TO BE SPLIT FACE WITH 1 INCH HONED CHAMFER



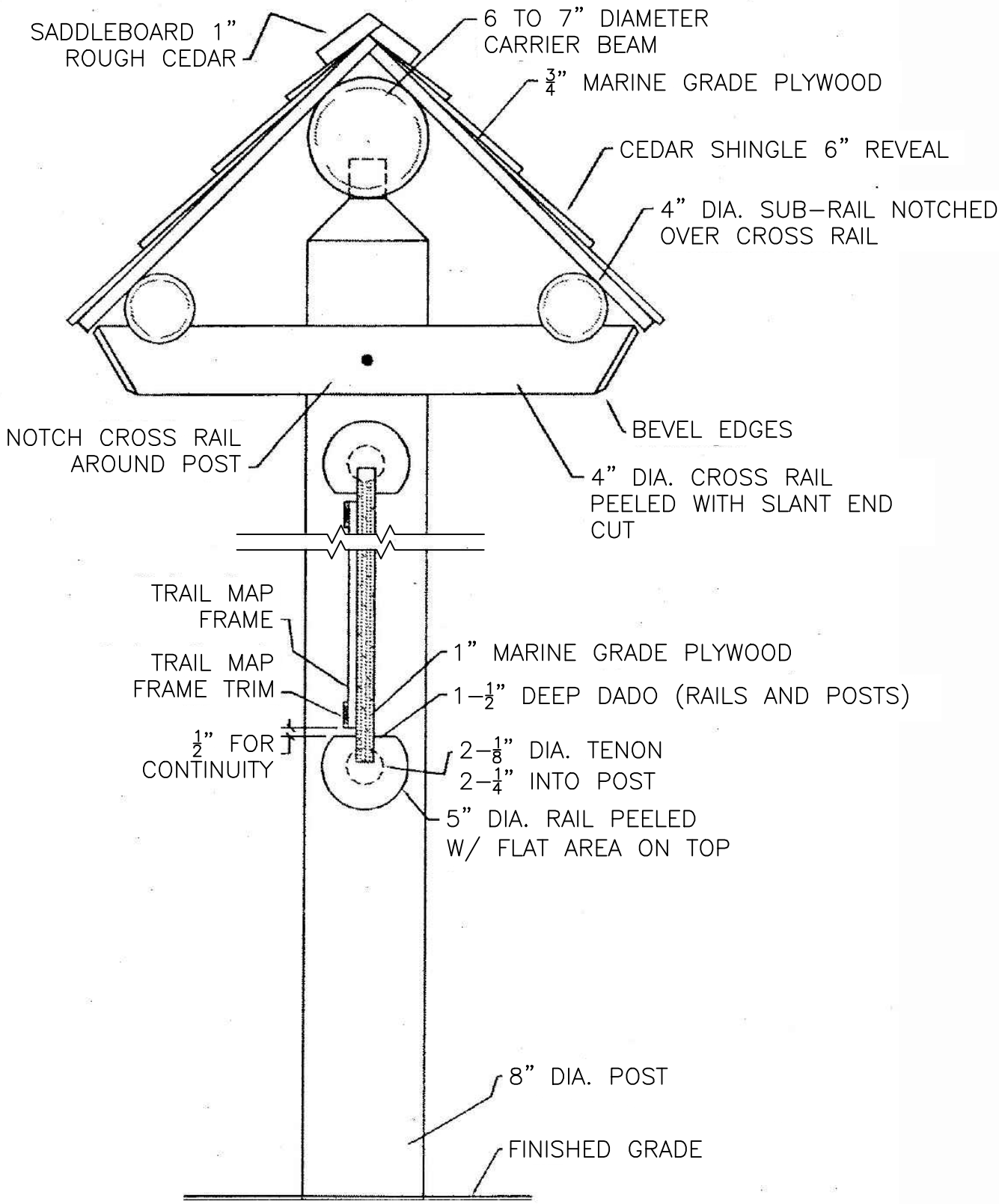
6-FT GRANITE SLAB BENCH BACKREST
NOT TO SCALE



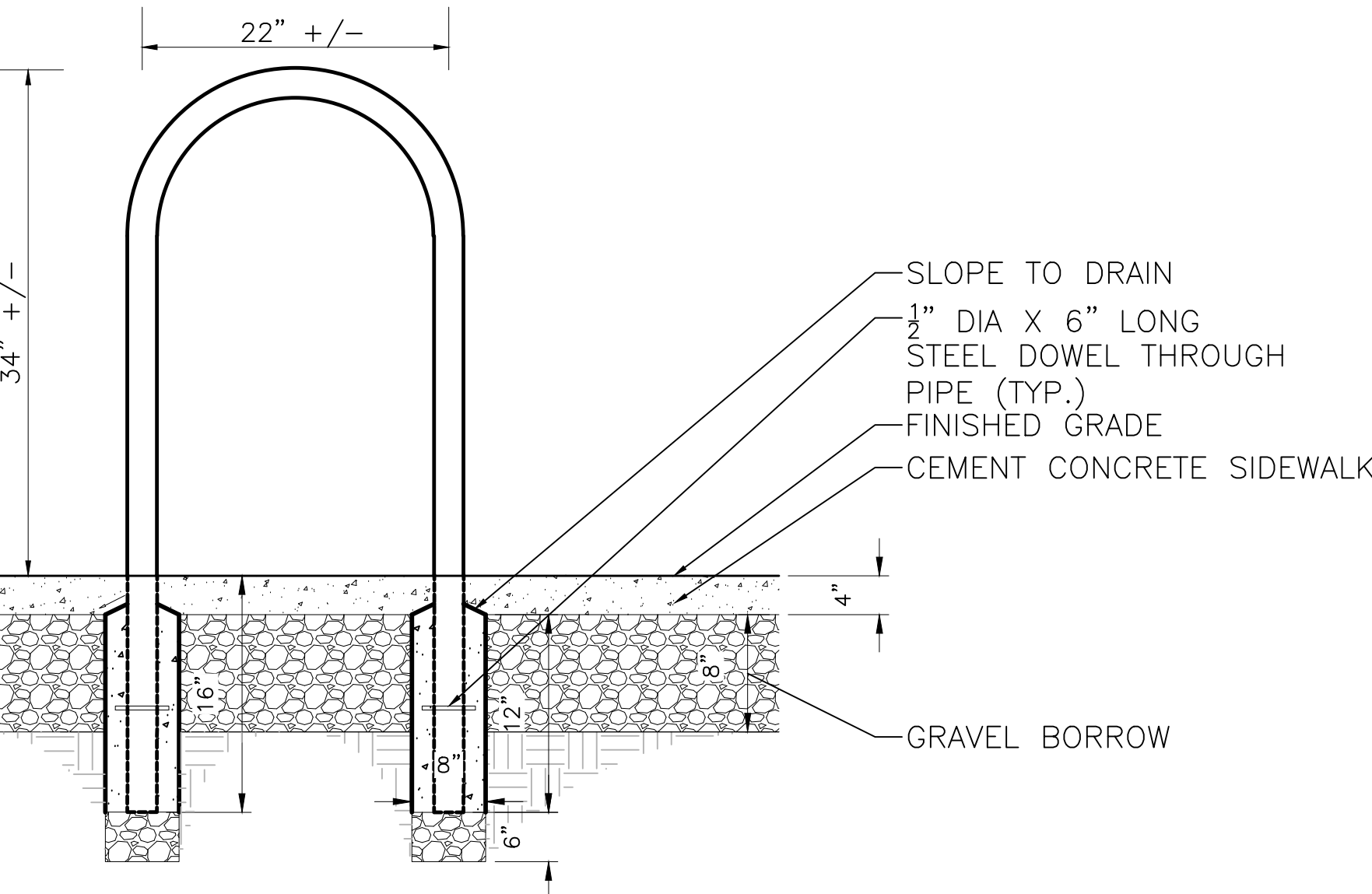
PLAN



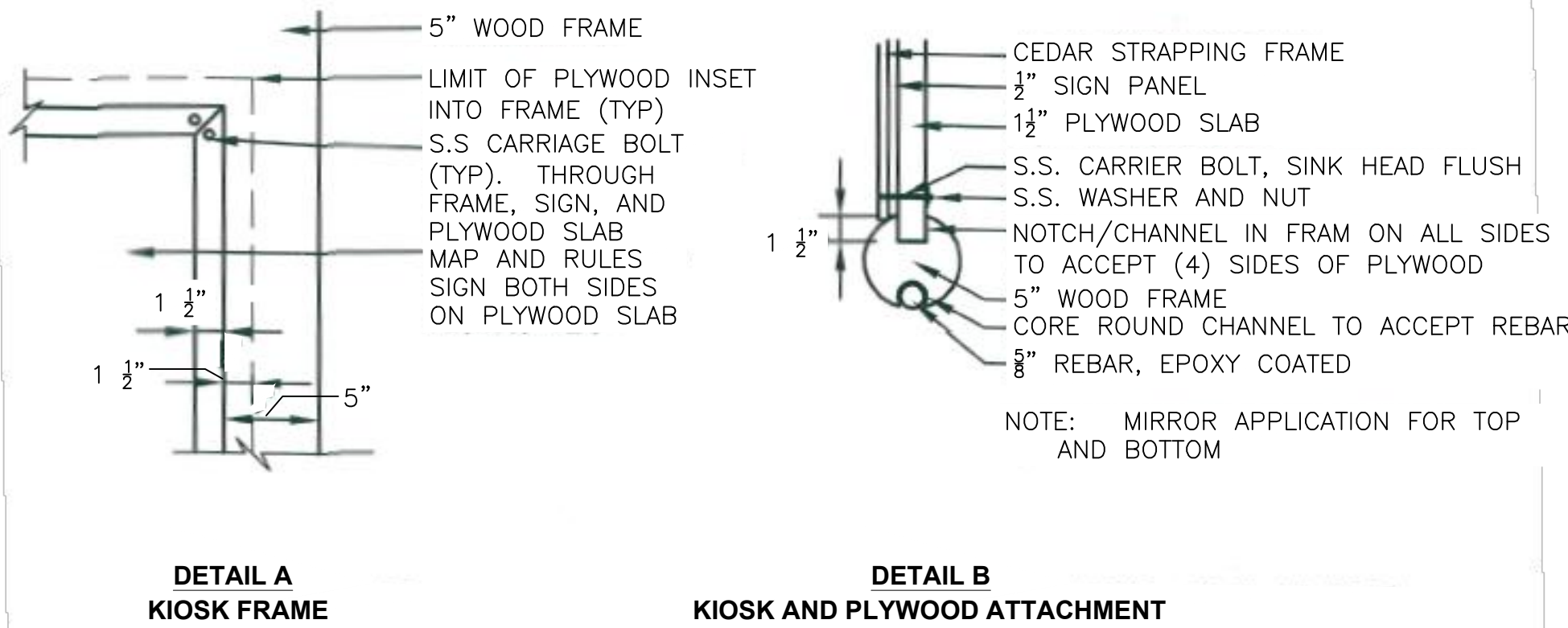
MESSAGE BOARD KIOSK
NOT TO SCALE



U-SHAPED BICYCLE RACK
NOT TO SCALE



- NOTES:
- BICYCLE RACK UNITS SHALL CONSIST OF INVERTED "U" PIPES
 - 2IN NOM SCHED 40, ASTM A 500 WELDED SEAMLESS STEEL PIPE CONSTRUCTION
 - INVERTED "U" PIPES SHALL BE PLACED PARALLEL TO EACH OTHER 36-INCHES O.C.
 - CONCRETE SHALL BE 4000 PSI, 3/4IN, 565 CEMENT CONCRETE



NOTE: MESSAGE BOARD MAP SIGN TO BE PRINTED DOUBLE SIDED

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	STP/TIP-002S(958)X	32	68
PROJECT FILE NO. 607571			

279+10.39

279+42.39

PROP 3' WIDE TEXTURIZED DECORATIVE PAVEMENT

WP. 3 STA 279+10.39, 8.0' RT

32'-0"

2x8 FLOOR JOISTS @ 16" O.C.

CCRT BIKEPATH

2x8 BLOCKING

HELICAL PILE, DRIVEN BATTERED

WP. 4 STA 279+42.39, 8.0' RT

PROP 3' SHOULDER

EDGE OF PAVEMENT (TYP.)

CL HELICAL PILES

WINGWALL RETURN

8'-0"

6"

1'-3"

C HELICAL PILES

HELICAL PILE (TYP.) DRIVEN VERTICAL U.N.O

CAST IN PLACE CONCRETE PILE CAP

2x6 DECKING SCREWED TO JOISTS

(3) - 4x6 RAILING POSTS EQUALLY SPACED

DOUBLE UP END JOISTS (TYP.)

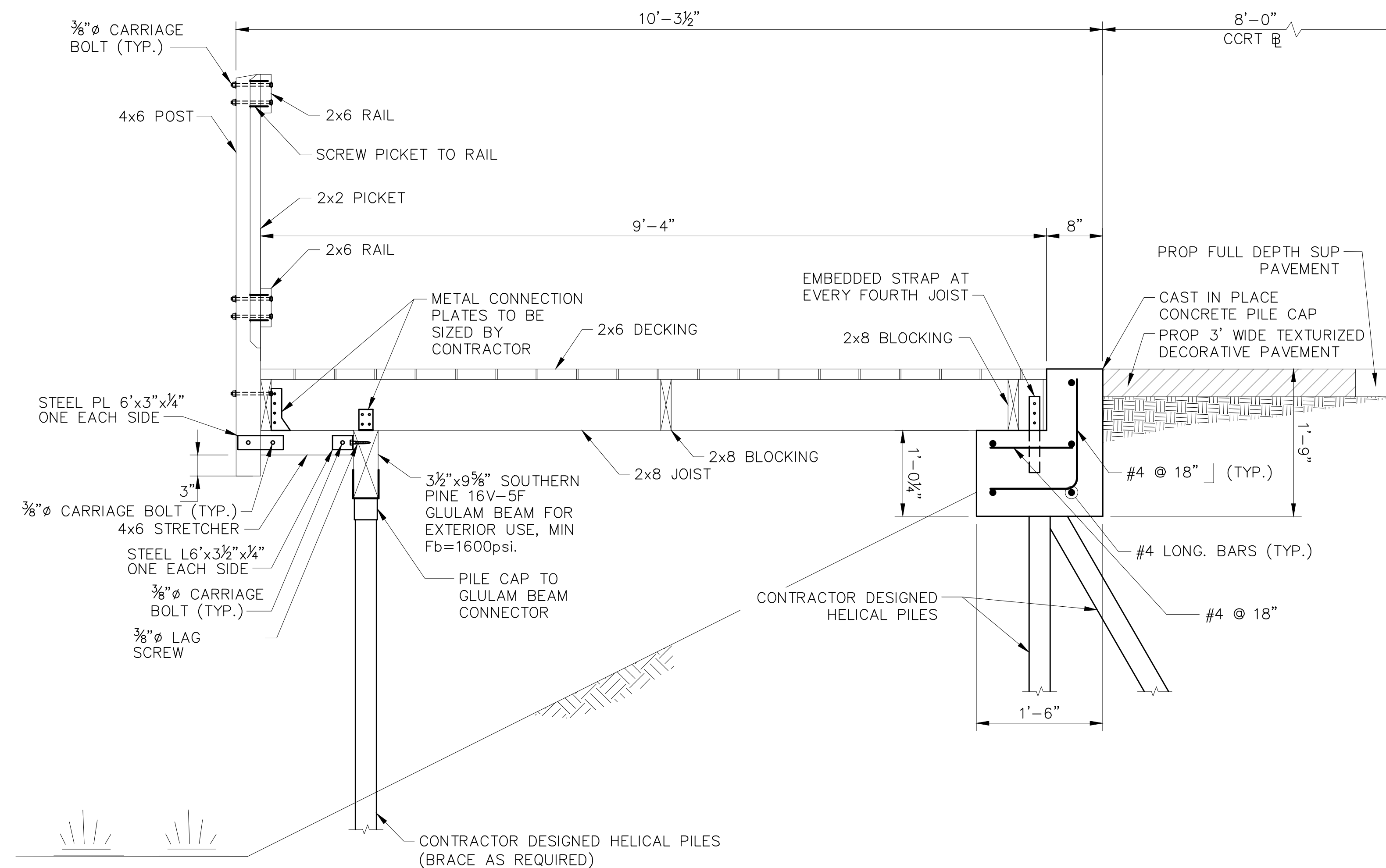
(7) - 4x6 RAILING POSTS EQUALLY SPACED

PLAN

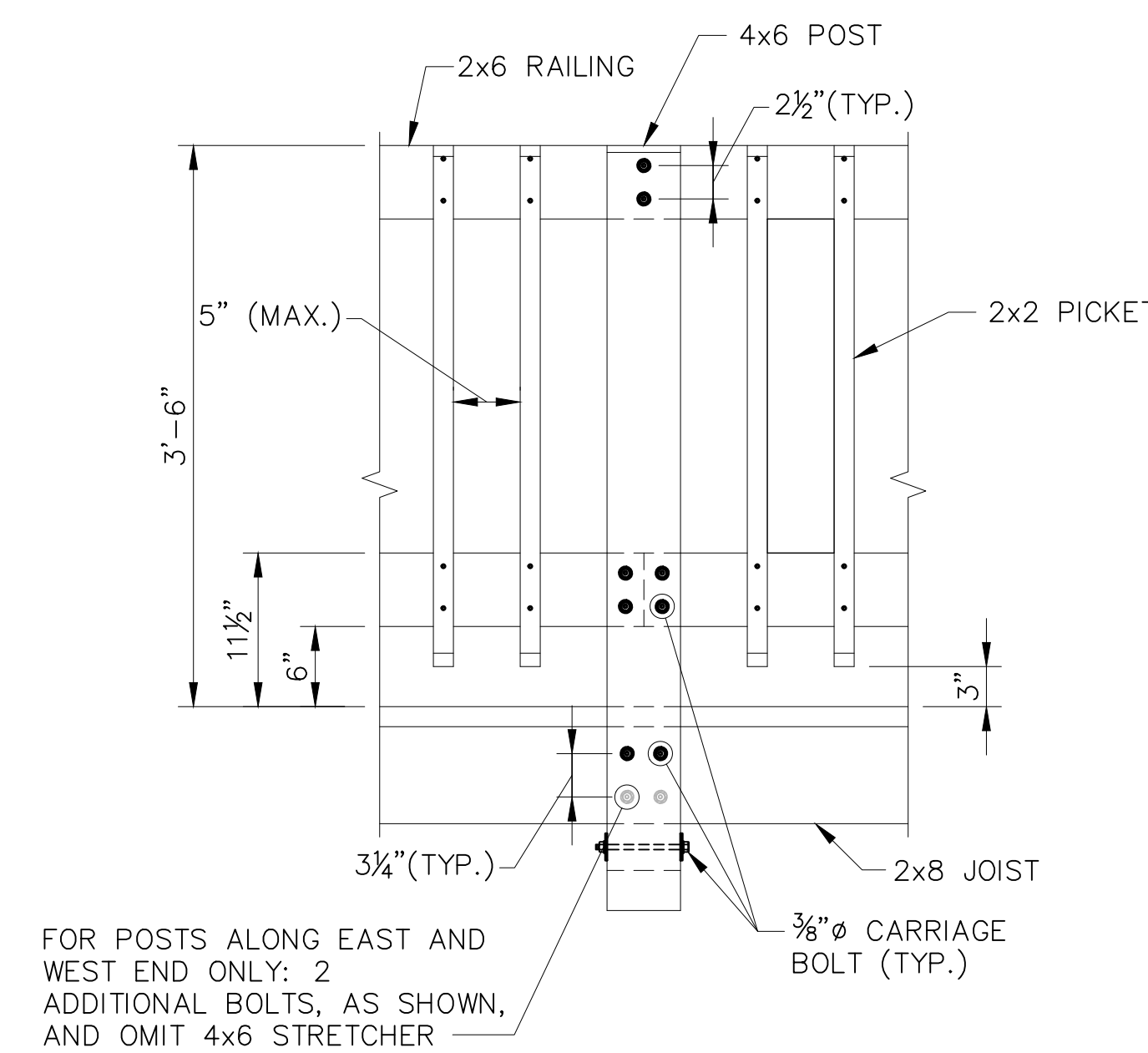
SCALE: 3/8" = 1'-0"

1

1. ALL METAL HARDWARE, INCLUDING BOLTS, SCREWS, NAILS, ANGLES, STRAPS, STEEL PLATES AND JOIST HANGERS SHALL BE STAINLESS STEEL.
2. TIMBER SIZES SHOWN ON THIS PLAN ARE NOMINAL, EXCEPT FOR GLULAM BEAM.
3. ALL TIMBER SHALL BE PRESSURE TREATED WITH ALKALINE COPPER QUAT (ACQ), CONFORMING TO AWPA STANDARDS.
4. ALL TIMBER SHALL BE SOUTHERN PINE NO. 1 DENSE, $F_b=2000\text{PSI}$, EXCEPT BLOCKING WHICH MAY BE NO. 2.
5. RAILS TO SPAN A MINIMUM OF 3 POSTS.
6. PILOT HOLES SHALL BE DRILLED PRIOR TO DRIVING OF SCREWS.
7. BOLT HOLES SHALL BE PRE DRILLED TO A DIAMETER $\frac{1}{8}"$ LARGER THAN BOLT DIAMETER.
8. ALL HOLES SHALL BE TREATED THOROUGHLY PRIOR TO INSTALLING SCREWS OR BOLTS.
9. CEMENT CONCRETE MASONRY SHALL BE $4000\text{PSI} - \frac{3}{4}" - 610\#$.
REINFORCING STEEL SHALL BE ASTM A615, GRADE 60 EPOXY COATED.
10. MINIMUM CLEAR COVER FOR REINFORCING SHALL BE 3" FOR CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH
11. AND 2" FOR ALL OTHER LOCATIONS.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE HELICAL PILES, INCLUDING THE CONNECTIONS BETWEEN THE HELICAL PILES AND THE CONCRETE PILE CAP AND GLULAM BEAM, AND LATERAL BRACING FOR PILES.
13. CONTRACTOR SHALL SUBMIT TO THE ENGINEER, ALL NECESSARY CALCULATIONS AND DETAILS FOR REVIEW AND APPROVAL, PRIOR TO CONSTRUCTION.
14. HELICAL PILE AND CONNECTION DESIGNS SHALL BE IN ACCORDANCE WITH THE MASSDOT BRIDGE DESIGN MANUAL AND AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, CURRENT ED., AND SHALL BE DESIGNED FOR SERVICE LOADS 8.0 KIPS VERTICAL FORCE PER PILE TO BE CARRIED BY VERTICAL PILES, AND SERVICE LOADS 5.0 KIPS LATERAL FORCE PER PILE TO BE CARRIED BY THE BATTERED PILES.
15. MINIMUM NUMBER OF VERTICAL PILES EQUALS 8.
16. MINIMUM NUMBER OF BATTERED PILES EQUALS 3.
17. MAXIMUM SPACING BETWEEN PILES EQUALS $10'-0"$.



SCALE: 1" = 1'-0"



SCALE: 1" = 1'-0"

